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graphy on Natural and Artificial Radioactivity in the Atmosphere

7 May 1956 No. 5

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

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* Address all business communications, orders and inquiries to the Executive Secretary, Mr. Kenneth C. Spengler, 3 Joy Street, Boston 8, Mass. Exchanges and reprints may be sent direct to P. O. Box 1736, Washington 13, D. C.

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY is a monthly publication devoted to:

A. Current Abstracts in English on important meteorological literature in every language.

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SUBSCRIPTION RATE: $8.00 per year to members and non members. Single and back issues $2.00. Back volumes, $10 per volume.

This publication has been made possible through support and sponsorship extended by the Geophysics Research Directorate of the Air Force Cambridge Research Center, Air Research and Development Command, under Contract No. A. F. 19 (604)-302.

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 7 MAY, 1956 No. 5

SPECIAL FEATURE IN THIS ISSUE

An Annotated Bibliography on Natural and Artificial Radioactivity

by

Geza Thuronyi

(For complete table of contents see back cover)

Published monthly at Prince and Lemon Streets, Lancaster, Pa., by the AMERICAN METEOROLOGICAL SOCIETY, 3 Joy Street, Boston 8, Mass.

Printed and issued by: Lancaster Press, Inc.

Digitized by the Internet Archive
in 2025

https://archive.org/details/meteorological-and-geoastrophysical-abstracts_1956-05_7_5

FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to bring to the attention of meteorologists current literature in their field and in related fields and to provide bibliographic information on various subjects, as interest demands.

Part I contains abstracts of current literature in the fields of meteorology, oceanography, etc., arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of important references on a special subject. No attempt is made to prepare exhaustive bibliographies; instead, the aim is to include a representative cross section of the various aspects of a subject.

Bibliographies published in the successive issues were:

Vol. I, 1950

1. Atmos. Pollution	2. Aerobiology	3. Cloud Physics	4. Hail
5. Tornadoes	6. Volcanic Dust	7. Climat. Changes	8. Thunderstorms
9. Icing	10. Acoust. Propagation	11. Evaporation	

Vol. II, 1951

1. Extended Forecast.	2. Long Range Forecast.	3. Soil Temp.	4. Constants, etc.
5. Clim. of Near East	6. Clim. of Middle East	7. Special Winds	8. Radar Storm Detect.
9. Condensation Trails	10. Clim. of N.E. Africa	11. Mountain Met.	

Vol. III, 1952

1. Clim. of N.W. Africa	2. Carbon Dioxide	3. Clim. of Argentina, etc.	4. Dew
5. Objective Forecast.	6. Stratus Forecast.	7. Urban Climatology	8. Clim. of C. Africa
9. Visibility	10. Glaze and Rime	11. Free Air Turbulence	

Vol. IV, 1953

1. Turbulence Theory	2. Turbulent Diffusion	3. Frost	4. Clim. of Australia, etc.
5. High Level Winds	6. Winds in Stratosphere	7. Jet Stream	8. Radiation Bioclim.
9. Clim. of Pacific	10. Auroras	11. Sferics	

Vol. V, 1954

1. Oceanog. Met.	2. Clim. of S.E. Asia	3. Auroral Physics	4. Tropopause
5. Balloons	6. Numerical Forecast.	7. Radiation Data	8. Vertical Motion
9. Clim. of Arctic	10. Industrial Met.	11. Wind Waves and Swell	

Vol. VI, 1955

1. Bibliog. of Bibliog.	2. Texts & Monogr. Bibliogs.	3. Storm Surges
4. Ionospheric Prop.	5. Photochem.—Upper Atmos.	6. Cloud Physics
7. Radar Cloud Physics	8. Atmos. Nuclei (1841–1950)	9. Atmos. Nuclei (1951–1955)
10. Weather Modification	11. Cooling Power	

Bibliographies published this year are:

1. Synoptic Meteorology of the Arctic, Vol. 7, No. 1, Jan. 1956
2. Climate of Enclosed Spaces, Vol. 7, No. 2, Feb. 1956
3. Cosmic Rays in the Atmosphere (–1952), Vol. 7, No. 3, March 1956
4. Cosmic Rays in the Atmosphere (1953–1956), Vol. 7, No. 4, April 1956
5. Atmospheric Radioactivity, Vol. 7, No. 5, May 1956

Forthcoming bibliographies will be:

6. Tropospheric Inversions, Vol. 7, No. 6, June 1956
7. Snow Micrometeorology, Vol. 7, No. 7, July 1956

Other bibliographies in preparation are:

Actinometers
Climate of the Arctic
Fog Forecasting
Microwave Propagation
Night Airglow
Ozone
Singularities
Snow Cover
Synoptic Aerology
Tropical Cyclones

Part III contains a listing of the contents of those journals which are primarily meteorological. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the December issue cumulative author, subject, geographical and journal indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where th material may be found. The Union List of Serials (Gregory) is the source of most of th symbols used. In some cases, where no symbol has been assigned to a library, one will b devised according to the principles of the Union List.

Library symbols used frequently may be found in the following list:

DA:	U. S. Dept. of Agriculture Library, Washington, D. C.
DBS:	U. S. Bureau of Standards Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DN-HO:	U. S. Navy Hydrographic Office Library, Suitland, Md.
DSG:	U. S. Army Medical Library, Washington, D. C.
DSI:	Smithsonian Institution Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
GB-MO:	Great Britain, Meteorological Office Library, Harrow, England.
MH-BH:	Harvard University, Blue Hill Observatory Library, Milton, Mass.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicates a good bibliography.
§	before an entry indicates a synoptic case history study accompanied by charts

Geographic locations are in the English form rather than the form used locally, for example Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherwis stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to th Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months ar abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Numbe (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thus a entry will read as follows:

Meteorologische Rundschau, 2(5/6):146–151, May/June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (Vo 2), *Heft* 5/6 (No. 5/6), *pages* 146–151, May/June 1950.

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

MAJOR GENERAL WORKS

COLLECTED WORKS

7.5–1 551.594.7:551.510.52

†Norton, Kenneth A. and Wiesner, Jerome B., **The scatter propagation issue.** *Institute of Radio Engineers, N. Y., Proceedings,* 43(10):1174, Oct. **1955. DLC**—This large issue of the **Proceedings** is devoted to about 35 papers on various aspects of tropospheric or ionospheric propagation of short radio waves beyond the horizon. The introduction by NORTON and WIESNER explains the phenomenon in terms of two contrasting theories, one that irregular "blobs" in the troposphere or cosmic dust clouds in the ionosphere are responsible for this anomalous propagation, the other that regular discontinuities could accomplish the same results (inversions or gradients producing refraction). Papers are abstracted separately and contents found in Pt. III, 7(3):398, *MAB. Subject Heading:* **1. Tropospheric propagation.** —*M.R.*

BOOKS

7.5–2 551.579

Peterson, Elmer Theodore, **Big dam foolishness: the problem of modern flood control and water storage.** Introduction by Paul B. Sears, N. Y., Devin-Adair, **1954.** 224 p. photos. **DLC**—This popular book is the result of the interest the author has maintained in promoting watershed control of runoff rather than control by means of big dams, since 1910, through publications of editorials, magazine and newspaper articles and speeches. The generalized statistics on rainfall, runoff, evaporation, transpiration and other aspects of the hydrologic cycle are cited in nearly every chapter. The main thesis is that floods and serious erosion are the exception rather than the rule when the hydrologic cycle is not disturbed by man. Many small dams on individual farms or creeks would aid the natural storage, whereas big dams destroy natural recreation areas and waste water, threaten downstream areas in case of bombing or overflow, will be obsolete for power production when atomic power is developed and, by claiming all the available money for construction, prevent erosion control projects from developing. The author is opposed to either multiple purpose projects, or to building both big dams and erosion control works. Even dams on mountain streams, where sillation is not a serious factor, may be harmful; but the large dams in the plains region (e.g., Kansas) are inexcusable. The Washita, Kansas program is cited as an example of a sensible approach to conservation. All objections and limitations to the thesis are countered with considerable fervor. Ten other watershed programs are mentioned. Instances are cited where 13.5″, 13″, 4.6″, 6″ and 4.57″ rainfalls in 4 to 24 hrs or more were completely controlled by watershed projects such as the author recommends. *Subject Headings:* **1. Hydrologic cycle 2. Conservation 3. Popular science books.**—*M.R.*

7.5–3 5(02) 551.5:37(02)

Gilman, Phil R. and Van Houten, L. F., **General science today.** N. Y., Rand McNally, **1954.** numerous illus. (incl. photos). *Rand McNally Dynamic Science Series.* **DWB**—Unit 5 of this ultra-modern science textbook for high school students, is concerned with our most abundant resource—water, Unit 6 with the invisible ocean—air; and Unit 7 with the earth's changing atmosphere—weather and climate. A 9-page glossary gives good definitions of such terms as air, aneroid barometer, atmospheric pressure, climate, precipitation, etc. Illustrations of ice island weather stations, glaze damage to wires, snow surveying, rain and wind measuring in the field, radar balloon and rocket equipment for sounding, radar photo of tornado and thunderstorm, weather forecasting and briefing activities, etc. dramatize

the sciences concerned. Considerable space is given to defining the principles behind meteorology and hydrology as well as the observational and applied aspects. *Subject Headings:* **1. Elementary meteorology 2. Science textbooks.**—*M.R.*

7.5–4 551.5(023) 551.509.21:621.39

Hornstein, R. A. (*Dominion Public Weather Office, Halifax, N. S.*), **Weather and why.** Illustrated by Norm Steinhaur. Toronto, Meteorological Div., **1954.** 61 p. refs. **DWB**—A systematically arranged popular pamphlet giving answers to about 25 questions which are most frequently asked of meteorologists broadcasting in the "Meet Your Weatherman" program carried by the Maritime and Newfoundland networks and the "Ask the Weatherman" program of Trans-Canada Network of CBS. The 2 page illustrated articles are on auroras, atomic bombs and weather, crepuscular rays, dew, equinoctial storms, green rays, halos, zodiacal light, nacreous clouds, jet stream, Indian summer, St. Elimo's fire, yellow snow, etc., etc. *Subject Headings:* **1. Weather broadcasting 2. Popular meteorology 3. Canada.**—*M.R.*

7.5–5 551.5:629.13(02)

Johnston, Harvey, **Weather ways.** Illustrated by Norm Steinhaur. Toronto, Meteorological Div., Dept. of Transport, Canada, **1953.** 127 p. numerous illus. **DLC**—A standard type of text on general meteorology for pilots, comprising a complete revision of **A Pilot's Course in Weather** by D. B. Kennedy which had been the basic text in meteorology for training pilots and other personnel interested in aviation in Canada. The treatment is non-mathematical and the diagrams and charts simple but accurate. The 19 chapters cover atmosphere, clouds, pressure, wind, moisture, stability, air masses, fronts, cold front weather, warm front weather, occlusions and upper fronts, precipitation and fog, visibility, icing, thunderstorms, turbulence, precipitation, static, etc. *Subject Headings:* **1. Meteorology textbooks for pilots 2. Aeronautical meteorology textbooks. I. Kennedy, D. B.**—*M.R.*

7.5–6 551.5(023)

Holmes, David C. and Pitkin, Marvin, **On the wings of the wind.** N. Y., McBride Co., **1955.** 204 p. diagrs., photos. **DLC**—A dramatic reconstruction of the various processes involved in meteorology, written for the nontechnical reader. The 13 chapters deal with: (1) the atmosphere; (2) the solar source of energy; (3) air masses, clouds and fog; (4) fronts and associated weather; (5) the delicate radiation moisture and chemical balance of the atmosphere; (6) cyclones and tornadoes; (7) hurricanes; (8) weather observers, reports and networks; (9) radar and other modern mechanical means of observing or computing meteorological data; (10) military and naval meteorology; (11) the ionosphere, aurora and geomagnetic field; (12) high altitude investigations both on the earth and in the free air and (13) weather modification. A number of good photographs and some schematic drawings give some pictorial background to the literary presentation involved in this popular science book. This is essentially the same book as **Young People's Book of the Weather** (*see* 7.5–7) except for Chs. 4, 11 and 12 which do not appear in the latter. *Subject Heading:* **1. Popular meteorology.**—*M.R.*

7.5–7 551.5:087.5

Holmes, David C. and Pitkin, Marvin, **Young people's book of weather.** N. Y., McBride Co., **1955.** 179 p. diagrs., photos. **DLC**—**On the wings of the Wind,** by the same authors (*see* 7.5–6), contains all of the chapters in this book, except Ch. 9 on amateur observing. This book omits Chs. 4, 11 and 12 of the former, chapters on classical frontal theory, on the ionosphere and aurora, and on high altitude investigations, respectively. These chapters are slightly more technical but not beyond the grasp of a high school student, so one infers that by "Young People" the authors mean children in the 6th to 9th grades. The various chapters are entitled: (1) the majestic roof of air, (2) the atomic furnace (sun), (3) islands in the sky (clouds), (4) the imperfect balance (of the atmosphere), (5) the twisting winds, (6) the hurricane, (7) twenty-five thousand prophets, (8) the robot forecaster, (9) backyard weatherman, (10) the invisible army and (11) the garden planet. *Subject Headings:* **1. Popular meteorology 2. Juvenile literature.**—*M.R.*

7.5–8 551.509.34(02)

Zharkov, Sergeĭ Nikolaevich, **Narodnye primety i predskazanie pogody.** [Folklore and weather forecasting.] Moscow, Gos.uchebno-pedagog.izd-vo, **1954.** 166 p. 36 figs. **DWB**—A popular edition (50,000 copies) on amateur forecasting, emphasizing the local signs and weather lore which are based on keen observations of the effect of the weather on man, animals, plants, etc. as well as on physical phenomena in the atmosphere. First the lore of various countries (proverbs and sayings) are classified according to type of phenomena observed or resulting weather; then effects of weather on living organisms; local indications from simple measurements of pressure, humidity, winds, clouds, optical or acoustical phenomena, and precipitation; then several chapters on horizontal and vertical movements of air, air masses and fronts giving a brief review of elementary synoptic meteorology. *Subject Headings:* **1. Amateur forecasting 2. Weather lore 3. Popular meteorology.**—*M.R.*

7.5–9 551.586(211):613.1

†Burton, Alan C. and Edholm, Otto G., **Man in a cold environment: physiological and pathological effects of exposure to low temperatures.** London, Edward Arnold, **1955.** 273 p. 75 figs., tables, numerous refs. *Monographs of the Physiological Society*, No. 2. **GB-MO**—This book covers the whole subject of exposure to cold in a very informative manner, both from the physical and medical viewpoints. Ch. 1, Homeothermy and history, deals with the advantages of warm-blooded animals, the reasons for the regulated temperature of 98.6°F, and the relation of health and civilization to mean temperature. Ch. 2, The problem of the homeotherm, the heat balance and physical laws, deals with the temperature and humidity of the skin, the "clo," a corresponding unit of 1 cm of "dead air" for vapor resistance, and heat production and losses. Ch. 3, The thermal insulation of the air, expresses IA as $1/(0.61+0.19 V^{1/2})$ clo (V in cm/sec). Ch. 4, The thermal insulation of clothing or fur, includes a number of practical suggestions for keeping warm. Ch. 5–12 are medical, Ch. 10 dealing with acclimatization to cold. Ch. 13 covers problems for future research. Bibliographies are given at the end of each chapter and on p. 248–265. *Subject Headings:* **1. Bioclimatology of cold regions 2. Medical climatology.**—*C.E.P.B.*

7.5–10 551.46

†Smith, Frederick George Walton and Chapin, Henry, **The sun, the sea, and tomorrow: potential sources of food, energy and minerals from the sea.** N. Y., Scribner, **1954.** 210 p. 22 figs., 3 tables, bibliog. p. 205–210. **DLC**—The ten chapters of this book about the food and energy resources of the sea, concern such aspects as salt, fish, minerals, power from tides, solar energy resources and relative importance of land and sea to supply the food and energy for the rapidly increasing population of the earth. Solar power from sea plants, land plants, direct heat, space heating, heat pumps, water power, wind power and sea heat as well as nonsolar power from coal and oil, nuclear fission, tides and earth heat is evaluated as to the use in 1950, maximum amount available and maximum use possible in 100 years. *Subject Headings:* **1. Solar energy resources 2. Sea resources.**—*M.R.*

MONOGRAPHS

See also: **Drift currents & permanent flow** (Hela), 7.5–37; **Dew formation** (Hofmann), 7.5–201; **Climate of Formosa** (Formosa Bank. Economy Res. Lab.), 7.5–222.

7.5–11 551.582.1(439.1) 63:91

Görög, László, **Magyarország mezőgazdasági földrajza.** [Agricultural geography of Hungary.] Budapest, Tervgazdasági Könyvkiadó, **1954.** 179 p. tables, 71 maps and graphs in pocket, 20 refs. **DLC**—A chapter on climate (p. 54–68) contains a general description of the climate of Hungary, discussion of the climatic requirements of the principal crops grown in Hungary and a climatic classification of the different regions of Hungary from the point of view of these crops. The appended maps include agroclimatic information such as amounts and probabilities of rainfall, accumulated temperature, sunshine, date of last frost, and climatic regions in Hungary, based on data covering 30 to 40 years (Append. 5–10). Of particular interest are the maps (Append. 64–71) showing suitability for growing wheat, corn and potatoes,

on the basis of rainfall probability during the growing season, temperature and soil conditions. *Subject Headings:* **1. Climate of Hungary 2. Agricultural geography 3. Hungary.**—*G.T.*

7.5–12 551.579 551.582.2(494)

*Lütschg-Loetscher, O.; Hauck, Theophil and Bohner, Rudolf, **Zum Wasserhaushalt des Schweizer Hochgebirges, Band 1, Teil 3, Allgemeines, Kapitel 10, Die Eis- und Schneeverhältnisse der Oberengadiner Sees insbesondere des St. Moritzer Sees.** [Water economy of the Swiss Alps, V. 1, Pt. 3, General, Ch. 10, The ice and snow conditions of upper Engadin lakes, especially Lake St. Moritz.] Zurich, Aschmann & Scheller, **1954.** 173 p. 48 tables (some fold.), 54 figs., photos, numerous foot-refs. *Beiträge zur Geologie der Schweiz, Geotechnische Serie, Hydrologie,* No. 4. **DWB**—This monograph constitutes a comprehensive study of the changes in the state of water, ice and snow in the region of the Oberengadin lakes especially that of St. Moritz Lake, which is no longer a natural lake but is now a water basin the levels of which change periodically as a result of the operation of hydroelectric plants of St. Moritz industry. This report contains (1) an account of the climate and presents meteorological data for St. Moritz for the period 1864–1945 and hydrological data dealing with the water balance of St. Moritz Lake (inflow and outflow, water levels and thermal characteristics of the water; and (2) a discussion of the freezing, thawing and duration of icing of the Oberengadin lakes during the period 1864–1945. Data on ice, snow cover and the associated meteorological conditions are given for selected years. Descriptions and illustrations of the methods of taking observations and the instrumentation and of various ice formations are presented. (For V. 1, Pt. 1, *see* 2.2–126, Feb. 1951, *MAB.*) *Subject Headings:* **1. Hydrologic data 2. Water level variations 3. Climate of St. Moritz 4. Swiss Alps 5. St. Moritz, Switzerland.**—*I.L.D.*

7.5–13 551.524.4(495)

†*Makris, Geōrgios I., **Epi tēs metabolēs tēs thermokrasias tou aeros meta tou hypsous eis diaphorous periokhas tēs Hellados.** [Variation of the air temperature with height in various regions of Greece.] *Greece. Ethnikon Asteroskopēion Athēnon, Hypomnemata, Ser.* 2, *Meteorologia,* No. 4, **1955.** 136 p. tables, 40 refs. In Greek; English summary between p. 133–134. **DWB**—Vertical temperature gradients are calculated for 7 respective areas of Greece, from observations made at surface stations in the valleys and in mountains during the 12 months of the year and for northerly and southerly winds, clear and overcast skies. Maximum and minimum temperature gradients as well as mean temperature gradients are analyzed. Gradients are greater in winter than in summer and in the north than in the south. Data are given in graphic as well as tabular form and analyzed at great length in the Greek text. *Subject Headings:* **1. Temperatures in Greece 2. Vertical temperature gradient 3. Greece.**—*M.R.*

7.5–14 551.5:338.91 550.3

Manpower resources in the earth sciences: a study conducted jointly by the National Science Foundation and the U. S. Dept. of Labor Bureau of Labor Statistics. Wash., D. C., National Science Foundation, **1954.** 75 p. numerous tables, 5 charts. **DWB**—An exceedingly intelligent and detailed analysis of >12,000 answers to questionnaires sent to about twice that number of professional geologists, geophysicists and meteorologists in the U. S. Of those who replied, more than 6500 were in the field of geology, 3000 in geophysics and 2800 in meteorology. The sex, income, age group, citizenship status, degree of education, specialty or field of greatest competence, and of actual employment in 1951, type of employment (government, industry, university, transportation, manufacturing, research and business), military status, type of activity (administration, research, teaching, consulting, technical writing, etc.) and major field in college. Analyses show interrelationships of all of these factors with each other, but for each of the 3 major fields there is a clearly presented perspective as to the most important relations or differences between the major fields (or the subgroups where significant relations appear). For instance, meteorology has the highest percentage working for the Government, the highest percentage without any academic degree, the highest percentage with low incomes and the highest percentage with training in other fields. Incomes in industry were substantially higher than in other fields; incomes of Ph.D.'s were highest,

Master's next, but those without degrees higher than those with Bachelor's degrees. Only 3% of the *total* were women (1% of geophysicists). Of meteorologists, 59% are in synoptic meteorology, 4% in climatology, 3% in instrumentation, 2% in physical meteorology and 2% in dynamic meteorology while 11% are in general meteorology. *Subject Headings:* **1. Meteorological manpower 2. Professional meteorologists 3. Meteorological education 4. Geophysical manpower. I. Shapiro, Solomon II. National Science Foundation III. U. S. Bureau of Labor Statistics.**—*M.R.*

7.5–15 551.521.3

Volz, F. (*Mainz*), **Neue Ergebnisse über die Optik und Meteorologie der atmosphärischen Trübung.** [New data on the optics and meteorology of atmospheric turbidity.] *Berlin. Freie Universität. Institut für Meteorologie und Geophysik, Meteorologische Abhandlungen,* 2(4):99–115, **1955.** 8 figs., 8 refs. **DWB**—A comprehensive analysis of the most important empirical data on spectral scattering functions of Alpine and valley sky light, obtained at Arosa and Frankfurt or Mainz. Three chief turbidity types can be determined easily by the color with the naked eye and are closely correlated with the air masses. Mountain and searchlight data are compared and the relation between scattering function and particle size of aerosol (theoretical), seasonal factors, relation to cloud physics and weather, and climatic factors are discussed and illustrated by means of scatter diagrams and curves. The work of CHR. JUNGE is especially considered as applicable to the cloud physics-aerosol aspects of this subject. *Subject Headings:* **1. Turbidity 2. Skylight color 3. Nuclei 4. Scattering function 5. Arosa, Switzerland 6. Mainz, Germany.**—*M.R.*

GENERAL GEOPHYSICS AND METEOROLOGY

OBSERVATORIES

7.5–16 551.501.9(744)

Harvard University. Blue Hill Visiting Committee, **Report of the Committee to the Board of Overseers of Harvard College.** *Blue Hill Meteorological Observatory, Reprint,* No. 7, **1953.** p. 37–43 (reprint from Harvard Univ., **Report of the President, 1952/1953?**). **MH-BH**—Activities, finances and history are outlined. The observatory has been continuously operating since 1884 and represents one of the best homogenous records available. *Subject Headings:* **1. Meteorological observatories 2. Blue Hill Observatory. I. Gross, Robert E.**—*A.A.*

7.5–17 551.501.9(058)(744)

†Blue Hill Meteorological Observatory, **[Report on] Blue Hill Meteorological Observatory. Reprinted from the Report of the President of Harvard College and Reports of Departments, 1953/1954.** Its *Reprint* No. 1, **1955.** 25 p. Publications of staff members, p. 23–25. **MH-BH**—Renewed contract activities of Blue Hill Observatory under sponsorship of the Weather Radar Unit of the Cloud Physics Section of AFCRC, GRD, on cloud physics and radar precipitation research; international activities (cloud atlas and 1940–49 edition of World Weather Records), damage and activities in connection with the hurricanes of 1954, library activities and publications of members of staff are among items covered. (For previous reports, *see* 4.5–32 and 7.1–5, May, 1953 and Jan. 1956, *MAB.*) *Subject Headings:* **1. Annual service reports 2. Blue Hill Observatory 3. Cloud physics 4. Radar research. I. Brooks, Charles F.** —*M.R.*

7.5–18 551.58(058)(494) 551.521

Davos, Switzerland. Schweizerisches Forschungsinstitut für Hochgebirgsklima und Tuberkulose, **Tätigkeitsbericht, 1953/54.** [Annual report, 1953/1954.] pub. **1954.** 12 p. **DWB**—Radiation research work in climatology and bioclimatology, personnel and publications, and a list of important guests are included in this report of the Physical-Meteorological Observatory at Davos, of which Dr. W. MÖRIKOFER is director. (For Reports, 1949–1952, *see* 5.5–194, May 1954, *MAB.*) *Subject Headings:* **1. Annual observatory reports 2. Radiation bioclimatology 3. Davos, Switzerland. Forschungsinstitut. I. Mörikofer, W.**—*M.R.*

7.5–19 551.501.9(09

Memorial tablets at Kew Observatory. *Meteorological Magazine*, London, 83(989):321–322, Nov. **1954.** photo. **DWB**—Description with photo of tablets unveiled July 21, 1954, in memory of founding of Kew Observatory in 1769, with list of Observers and Superintendents. A smaller tablet recalls ROBERT BECKLEY, Assistant 1853–72 and designer of recording anemometer and rain gage. *Subject Headings:* **1. History of Kew Observatory 2. Kew Observatory, England.**—*C.E.P.B.*

7.5–20 551.501.9(422

Glasspoole, J., **Climatological observations at Greenwich.** *Meteorological Magazine*, London, 83(985):201–202, July **1954.** table. **DWB**—The climatological station at Greenwich Observatory has been replaced by one at the National Maritime Museum, 125 ft lower. A comparison of the two sites is given, based on 15 months overlap. *Subject Headings:* **1. Meteorological stations 2. Greenwich, England.**—*C.E.P.B.*

7.5–21 551.5:523.74

Two major observatories join in solar studies. *Science News Letter*, Wash., D. C. 27(21):327, May 21, **1955. DLC**—The explosive energy of the sun and its impact on all atmospheric layers will be jointly studied by the Smithsonian Institution and Harvard University. The subject has great theoretical interest for astronomers and geophysicists and is of practical value in radio communication, weather forecasting and rocket flights. Headquarters of the Astrophysical Observatory is being moved from Washington, D. C., to Cambridge, Mass., as of July 1, 1955. *Subject Headings:* **1. Solar activity research.**—*W.N.*

7.5–22 550.384

Fanselau, G., **Vorläufiger Bericht über die Beobachtungen am Adolf-Schmidt-Observatorium für Erdmagnetismus in Niemegk in der Zeit vom 1. September bis 31. Dezember 1954.** [Preliminary report on the observations at the Adolf Schmidt Observatory in Niemegk Sept. 1–Dec. 31, 1954.] *Beiträge zur Geophysik*, 65(1):50–55, **1955.** fig., tables. **DWB**—*Subject Headings:* **1. Magnetic variations 2. Niemegk, Germany.**

CONFERENCES

See also: **Soil Mechanics Conference, Montreal,** 7.5–164.

7.5–23 550.3:378.2

Kandidatskie dissertatsii, zashchishchennye na zasedaniiakh uchenogo soveta geofizicheskogo Instituta AN SSSR v 1953 g. [Dissertations defended by candidates at the meetings of the Council of the Geophysical Institute of the USSR held in 1953.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geofiz.*, No. 2:205–208, **1954. DLC**—Most of the dissertations, which are described with brief abstracts, deal with seismology and terrestrial magnetism. A few are concerned with oceanography, atmospheric physics and hydrodynamics. *Subject Headings:* **1. Geophysical conferences 2. U.S.S.R. Geophysical Institute.**—*I.L.D.*

7.5–24 551.5:551.46:061.3(94)

Ramdas, L. A. (*Met. Office, Poona*), **The Pan Indian Ocean Science Congress at Perth, West Australia, August 17–23, 1954.** *Indian Journal of Meteorology and Geophysics*, Delhi, 5(4):363–365, Oct. **1954. DLC**—A delegation of 8 Indian scientists including a meteorologist and an oceanographer, attended the Congress. Seasonal forecasting, agricultural meteorology, cosmic rays, rain making, etc. were subjects of symposia or discussions. Details of various papers or discussions are reviewed. The next meeting will be in Madagascar in 1957. *Subject Headings:* **1. Meteorological symposia 2. Pan Indian Ocean Science Congress 3. Perth, Western Australia.**—*M.R.*

7.5–25 550.3:06

Sans Huelin, Guillermo, **Symposium internacional sobre Geofísica y Geodesia Geofísica.** [International Symposium on Geophysics and Geophysical Geodesy.] *Revista de Geofísica, Madrid*, 13(49):123–126, Jan./March **1954. DWB**—Report on discussions held during

symposium at Columbus, Ohio in Nov. 1953. *Subject Headings:* **1. Geophysical conferences 2. Columbus, Ohio.**—*M.R.*

7.5–26 551.578.46:061.3

*†Western Snow Conference, Salt Lake City, April 19–21, 1954, **Proceedings of the twenty-second annual meeting.** Austin E. Helmers, general chairman. Fort Collins, Colo., Colorado A. and M. College, Oct. 1954. 94 p. figs., tables, refs., eqs. Price: $2.00 from the Western Snow Conference. **DWB**—Contains 14 papers (abstracted separately), together with discussion of each and purpose graphs, photos and tables. Subject matter included Weather Control Committee activities, rain making in Utah, snow melt, stream flow, long range forecasting, snow surveying, streamflow forecasting, etc., and contributors include H. T. ORVILLE, W. G. LANGBEIN, G. W. CRADDOCK, ROBERT D. ELLIOTT, CHARLES PENNYPACKER SMITH and others. (For list of papers, *see* Pt. III, 7(5):668, May 1956, *MAB.*) *Subject Headings:* **1. Snow conference proceedings 2. Western United States.**—*M.R.*

BIOGRAPHY AND BIBLIOGRAPHY

BIOGRAPHY

7.5–27 551.5(09)

Hay, R. F. M., **William Dampier's contribution to meteorology.** *Weather*, 10(6):194–199, June 1955. photo. **DWB**—Dampier, born 1651, made numerous voyages in the tropics, including circumnavigations of the globe. His accounts contain accurate descriptions of meteorological phenomena. Those quoted include a typhoon off Hong Kong, a waterspout, the climate of Tonkin, and sea breezes. A portrait of DAMPIER is included. *Subject Heading:* **1. History of meteorology. I. Dampier, William.**—*C.E.P.B.*

7.5–28 551.5:92

Hawke, E. L., **Mr. J. Fairgrieve, M.A., F.R.G.S.** *Royal Meteorological Society, Quarterly Journal*, 80(343):128, Jan. 1954. **DWB**—Born in Ayrshire March 14, 1870, died Barnet near London, Oct. 8, 1953. Specially interested in teaching geography. Made a detailed study of development and travel of rainfields. *Subject Headings:* **1. Biography 2. Fairgrieve, J.** —*C.E.P.B.*

7.5–29 550.38:92

Davy, N., **Carl Friedrich Gauss as a physicist.** *Nature*, London, 175(4451):325–326, Feb. 19, 1955. 5 refs. **DWB**—GAUSS, born April 20, 1777 at Brunswick, became Director of the new astronomical observatory at Göttingen in 1807 and died there Feb. 23, 1855. He became interested in geomagnetism in 1831, and his fundamental work in geomagnetism is described, including theory, introduction of absolute units, and organization of a union of magnetic observatories. *Subject Headings:* **1. Biography 2. Geomagnetism 3. Gauss, Carl Friedrich.**—*C.E.P.B.*

7.5–30 551.579:061.1:63

Rothamsted Experimental Station: Dr. R. K. Schofield [and] Dr. H. L. Penman. *Nature*, London, 175(4450):283, Feb. 12, 1955. **DWB**—Notes on appointment of SCHOFIELD as head of Chemistry Department and PENMAN as head of Physics Department, with an appreciation of their work on soil science, including soil moisture and water conservation. *Subject Headings:* **1. Rothamsted Experimental Station 2. Soil moisture studies. I. Schofield, R. K. II. Penman, H. L.**—*C.E.P.B.*

7.5–31 551.5:92

Retirement of Mr. P. N. Skelton, M.B.E. *Meteorological Magazine*, London, 84(999): 290–291, Sept. 1955. photo. **DWB**—Retired July 9, 1955, after 49 years in the Meteorological Office. In 1948 he became Head of the Instrument Supply Branch. In 1942 he received the M.B.E. *Subject Headings:* **1. Biography 2. Skelton, P. N.**—*C.E.P.B.*

BIBLIOGRAPHY

See also: **Dew** (Hofmann), **7.5–201.**

7.5–32 551.5:8.03:016

†American Meteorological Society, **Cumulative list of translations made by the American Meteorological Society Translating Unit, Jan. 11, 1952–Dec. 31, 1954.** 48 p. Arranged alphabetically by author in four groups: 1. Complete translations. 2. Translations on tape. 3. Abstracts (of certain Russian periodicals and 2 books). 4. Translations received on exchange. **MH-BH**—A total of 284 titles are listed under the 4 categories. Original titles are given in Library of Congress transliteration scheme following the English title. Work is from Russian, German, Dutch, French, Greek, Hungarian, Italian, Spanish and Bulgarian sources. *Subject Headings:* **1. Translations 2. Russian meteorological literature 3. Bibliography of translations.**—*M.R.*

7.5–33 551.579:016

†International Union of Geodesy and Geophysics. Association of Scientific Hydrology, [**International Bibliography of Hydrology**]. **Hydrologische Bibliographie, Deutschland** [Hydrological bibliography for Germany], 1951. pub. Coblenz, 1955. 119 p. 487 refs. **DWB**—Format similar to 1945–1950 issues. Sec. I (Hydrometeorology) contains 83 abstracts of German publications in the 4 fields of (1) rain, (2) snow, (3) evaporation and humidity and (4) applications. Sec. II, Streams; III, Lakes; IV, Glaciers; V, Ground water; VI, Hydrologic cycle (37 items); VII, Applications of other sciences to hydrology; VIII, General works (bibliographies, handbooks, glaciers, reports of meetings) and IX, Miscellaneous. Sec. X is an author index. Most of the items are from literature published in Germany in 1950 and 1951. For abstract of earlier issues, *see* 6A–85, Jan. 1955, *MAB.*) *Subject Headings:* **1. Hydrology bibliographies 2. Hydrometeorology 3. Germany.**—*M.R.*

7.5–34 551.5:017

†Lange, Maxwell and Springer, Ltd., London, **Meteorology and cognate sciences. Books mainly from the Library of the Royal Meteorological Society, London, with a section of periodical publications and current books.** Its *Catalogue*, No. 11, Autumn 1954. 56 p. **DWB**—A list of 863 books and monographs, serials, etc. and prices for each, plus about 60 current books, the main part of a collection disposed of by the Royal Meteorological Society when their library was reorganized after World War II. Many old and valuable books and some long series of periodicals are included. *Subject Heading:* **1. Meteorology book catalogs.**—*M.R.*

7.5–35 551.5(023):048.1

†Rigby, Malcolm (*Ed., Met. Abstracts, Wash., D. C.*), **Recent books on meteorology.** *Weatherwise*, 8(2):50–51, 56–57, April 1955. port. Also his: **Recent specialized meteorological books (1952–1954).** *Ibid.*, 8(3):74–76, June 1955. **DWB**—Fifteen recent meteorological, climatological or geophysical texts or popular science books published in England or the U. S. (1953 and 1954) are reviewed noncritically for the amateur meteorologist or student in the first article. The second article contains popular reviews of 19 recent technical books on such varied subjects as aeronautical meteorology, micrometeorology, tropical meteorology, cloud physics, climatic changes, instruments, visibility, rocket research, physical meteorology, bioclimatology, statistical methods, oceanography and long range forecasting. *Subject Headings:* **1. Reviews of meteorology books 2. Bibliographies of textbooks.**—*M.R.*

7.5–36 551.5:016(05)

Terra, Helsinki, vol. 66, No. 4, 1954. DLC—This issue includes the index for v. 41–65, 1929–1953, the third index since the beginning of this journal in 1888 as the **Tidskrift** of the Geografiska Föreningens, Helsinki. Index is divided into an alphabetical Author Index and a Subject Index (latter alphabetical by author under five subheads: General, Regional and Finnish Geography, Biography, and Congresses). Pages 125–126 and 139–140 touch on Meteorology and Climatology. With 13 references under the **Meteorology and climatology** and 8 references under **Hydrography.** p. 139–140. *Subject Headings:* **1. Author indexes 2. Subject indexes 3. Periodical indexes.**—*W.N.*

APPLIED METEOROLOGY

MARINE METEOROLOGY AND OCEANOGRAPHY

7.5–37 551.556:551.465(261.3)

*Hela, Ilmo, **Drift currents and permanent flow.** *Finska Vetenskaps-Societeten, Helsinki, Commentationes Physico-Mathematicae*, 16(14), **1952.** 28 p. 9 figs., 25 tables, 2 refs. **DLC**—Supplementing PALMÉN's (1930) study of **Currents in the Gulf of Finland and the Baltic,** based on 1923–27 data, the observations made during 1928–1939 (16,920 current observations) at Lightships "Helsinki" and "Talinn" are analyzed in every conceivable manner to show the relations between the wind and drift currents, and the permanent flow exclusive of drift currents. The speed and angle of deflection of drift currents with respect to wind is also created. The characteristic current (sum of permanent and steady wind driven current) for each month is computed. This "characteristic" current plus the drift current gives the "resulting" current. Finally, the pure drift current is calculated by eliminating the "characteristic" current from the actual current. Coastal influences are shown in graphical form and discussed. *Subject Headings:* **1. Currents in Gulf of Finland 2. Wind driven currents 3. Gulf of Finland.**—*M.R.*

7.5–38 551.46:37

Freeman, John C., Jr. (*Agr. and Mech. Col. of Texas*), **Oceanography in Texas.** *I.U.G.G. Association of Physical Oceanography, Rome, Sept. 14–25, 1954, Procès-Verbaux.* Bergen, **1954.** p. 147. **DWB**—A Dept. of Oceanography was organized in the fall of 1949 at Texas A. & M. College. The report gives brief information on: the actual academic and research staffs (now 100 in number), the undergraduate program, the M.S. and Ph.D. degrees offered yearly in each of the 5 phases of oceanography, the contract research on 20 projects sponsored by the government and industrial agencies, and the annual budget of the department ($7,500,000). *Subject Headings:* **1. Oceanographic research 2. Oceanographic education 3. Texas Agricultural and Mechanical College.**—*A.M.P.*

7.5–39 551.46:06

Hachey, H. B. (*Canadian Joint Com. on Oceanog.*), **A review of Canadian oceanography.** *I.U.G.G. Association of Physical Oceanography, Rome, Sept. 14–25, 1954, Procès-Verbaux.* Bergen, **1954.** p. 121–122. **DWB**—The organization of Canadian oceanography is described and discussed. It is headed by the Canadian Joint Committee formed in 1946 involving the Fisheries Research Board, the Royal Canadian Navy, the National Research Council and the Hydrographic Service. Its chief functions are: to further oceanographic research and to direct (through the Chief Oceanographer) the work of the Atlantic and Pacific Groups. In the Arctic, although the investigations are still of a reconnaissance nature; a comprehensive program is now getting underway, both in the eastern and western Arctic. *Subject Headings:* **1. Oceanographic services 2. Canada.**—*A.M.P.*

7.5–40 551.46:06

†Hansen, Walter (*Deutsches Hydro. Inst., Hamburg*), **Physikalische Ozeanographie am Deutschen Hydrographischen Institut, 1951–1954.** [Physical oceanography at the German Hydrographic Institute, 1951–1954.] *I.U.G.G. Association of Physical Oceanography, Rome, Sept. 14–25, 1954, Procès-Verbaux.* Bergen, **1954.** p. 123–130. bibliog. p. 127–130. **DWB**—Contains an inventory of results of investigations, papers and scientific achievements obtained by oceanographers of the German Hydrographic Institute in the fields of: morphology and geology of seas and oceans; currents and surface conditions of the sea (drift currents, slack water); periodical movements (tides and surface waves); oceanographic observation and instruments; physics and chemistry of the sea; and sea ice. A list of 51 references divided according to the several fields is added. *Subject Headings:* **1. Oceanographic research 2. German Hydrographic Institute.**—*A.M.P.*

7.5–41 551.465

†Haurwitz, B. (*Dept. of Met. and Oceanog., N. Y. Univ.*), **Report of ocean wave research conducted at New York University.** *I.U.G.G. Association of Physical Oceanography, Rome,*

Sept. 14–25, 1954, Procès-Verbaux. Bergen, **1954.** p. 150–153. bibliog. p. 152–153. **DW**
—A report of the work done in recent years by the Dept. of Meteorology and Oceanograp
on ocean wave research on the basis of empirical and theoretical studies. Principles of hydr
dynamics, Fourier analysis, time series, and statistics were combined to achieve results whi
come close to representing actual wind generated gravity waves within the limitations of a line
theory. Explanation of the behavior of swell and the period increase observed in wav
traveling out of the wave generating area are given. A theory adequately explaining the fa
that a ship rolls with one average period and pitches with another average period has be
developed. *Subject Headings:* **1. Ocean wave research 2. New York University 3. Ocea
swell.**—*A.M.P.*

7.5–42 551.5(263):551.4

Leipper, Dale F. (*Head, Dept. of Oceanog., Texas A. & M. College*), **Marine meteorolog of the Gulf of Mexico: a brief review.** *Texas. Agricultural and Mechanical College. Dep of Oceanography, Collected Reprints in Oceanography and Meteorology,* No. 1/30, **1950–195** 279–288. 6 figs., table, 19 refs. **DWB.** Reprint from *U. S. Fish and Wildlife Servic Fishery Bulletin,* No. 89 (**1952?**) **DA**—A general but analytical review of meteorologic conditions in the Gulf of Mexico, including discussion of extratropical cyclones, general circul tion effects, average pressure and wind conditions, observing stations, typical upper air sound ings at Swan Island, New Orleans and Brownsville; northers, meteorological and hurrica tides, hurricanes, applications of marine meteorology in the Gulf, and sources of informatio (pilot charts, and other Hydrographic Office-U. S. Weather Bureau publications). Mo knowledge of the underlying water surface in the Gulf is needed for development of marin meteorology of area. *Subject Headings:* **1. Marine meteorology 2. Gulf of Mexico.**—*M.R.*

7.5–43 551.4

Panikkar, N. K. and Ramachandra Rao, M. B. (*Central Bd. of Geoph., India*), **Note o recent oceanographic work in India.** *I.U.G.G. Association of Physical Oceanograph Rome, Sept.* 14–25, 1954, *Procès-Verbaux.* Bergen, **1954.** p. 136–142. bibliog. p. 141–14 **DWB**—The oceanographic work carried out in India deals with: 1) physical oceanograph studies made by the Indian Navy, the India Meteorological Dept., the Andhra Universit and the Central Marine Fisheries Station at Mandapan; 2) tidal observations made by th Survey of India (Geodetic Branch); 3) marine biological studies carried out by the Centra Marine Fisheries Station at Mandapan, fishery stations of certain maritime states and geolog departments of universities situated on the seacoast. Plans and proposals for establishing Central Institute of Oceanography at a suitable center have been taken up by the Ocea ography Committee. *Subject Headings:* **1. Oceanographic research 2. India.**—*A.M.P.*

7.5–44 551.46

Lednev, V. A., **Izmereniia gidrologicheskogo rezhima Azovskogo, Aral'skogo i Kaspiĭskog moreĭ pri umen'shenii stoka rek.** [Variations in hydrologic regime of the Azov, Aral an Caspian seas during decrease of river discharge.] *Meteorologiia i Gidrologiia,* Leningrad No. 4:13–20, July/Aug. **1955.** 6 tables, eq. **DWB**—The limits of the possible variations o different elements of the hydrological regime of the seas were examined in order to obtain basis for developing the fishing industry. This study contained an analysis of the mea salinity (in %) of the Sea of Azov in case of the annual renewal of 13.5 km³ of water from th river flow; changes in the Sea of Aral in case of an annual withdrawal of 10 and 20 km³ o water from the river flow; the effect of withdrawal of elements of the salt balance upon change in the salinity of the Caspian and Aral Seas; area and volume of water during a drop in se level for the Aral and Caspian Seas; and expected salinity of the Northern Caspian in case o a withdrawal of 50 km³ from Volga River flow. *Subject Headings:* **1. Hydrologic regim 2. Salinity distribution 3. Azov Sea 4. Aral Sea 5. Caspian Sea.**—*I.L.D.*

7.5–45 551.582(51):629.1

*Great Britain. Hydrographic Dept., **Ch'ang chiang Pilot comprising the Ch'ang chian from Wu-sung Bar to the head of Navigation, also Po-yang hu and the rivers flowing into it Han chiang, Tung-t'ing hu and the rivers flowing into it, Chia-ling chiang and Min chiang**

ed. London, **1954.** 49+394 p. 56 plates, tables. Meteorology, p. xxxiv-xlix; Climatic tables, p. 15–23. *Subject Headings:* **1. Sailing directions 2. China.**

7.5–46 551.582:656.6(47)

*U. S. Hydrographic Office, **Sailing directions for Northern U.S.S.R., vol. 1, Mys Nemetskiy to Mys Kamin Nos.** 1st ed. **1953.** Its *H.O. Publication*, No. 137A, **1954.** 402 p. 72 figs., charts (1 fold. in pocket). loose-leaf. "137B to be pub. Oct. 1954; 137 C, Feb. 1955." **DWB**—This is the most elaborate of the H.O. Sailing Directions, and the first to be put out in loose-leaf form. The charts are neat and well printed. In Sec. 1, Ocean and Coastal *Currents* are discussed on p. 29–48 (with many detailed charts), *Ice*, p. 48–116 (warming of Arctic seas, p. 61–62; dates of freezing and opening of ports and bays, p. 75; Ice terminology, p. 76–96); *Climatology*, p. 116–149 (wind, temperature, precipitation, snow, cloud, humidity, visibility, fog, wind roses and tabular data as well as charts); and *Sea temperatures*, p. 150–159. Some discussion of currents, weather, ice, etc. is included in separate sections on the various sectors of the White Sea (Ch. 2–6) on pages 161–374. Extensive climatic tables for 6 stations are appended. *Subject Headings:* **1. Climate of White Sea area 2. Sailing directions 3. White Sea.**—*M.R.*

AERONAUTICAL METEOROLOGY

See also: **Sub-tropical jet stream** (Hoyle), 7.5–122; **Jet stream** (N. Y. Times Mag.), 7.5–123; **Pacific jet stream** (Serebreny et al.), 7.5–124; **Jet stream over Pacific** (Serebreny), 7.5–125; **Jet stream navigation** (Stieflemaier), 7.5–126.

7.5–47 551.501.45:681.143:629.13

U. S. Air Weather Service, **Meteorological uses of the E6D computer.** Its *Manual* 195-46, Nov. **1954.** 13 p. 21 figs. **DWB**—The E6D dead reckoning computer is a multipurpose circular slide rule which has been made standard equipment for U. S. Air Weather Service Forecast units. The manual explains, illustrates and gives examples of the computer and its use in calculating: 1) true air speed (knots) from Mach number; 2) true air speed corrected for density; 3) true altitude correlated for temperature; 4) density altitude; 5) single drift correction; 6) course correction angle; 7) ground speed; 8) estimated time of flight; 9) wind factor and 10) conversions of units. *Subject Headings:* **1. Dead reckoning computers 2. Aeronautical meteorology 3. Instrument manuals 4. Slide rules.**—*M.R.*

7.5–48 551.5:629.13

Winter weather hazards. Weather maps prepared by Air Weather Service. *Flying Safety*, Wash., D. C., 10(10):14–15, Oct. **1954.** maps. **DWB**—Charts of U. S. show isolines of frequency of low ceilings and visibilities, % of time that snow, fog and rain falls in winter; and histograms of monthly number of major accidents to military aircraft in U. S. in which rain, snow and low ceilings (excluding fog) figured during 1947–53. The latter chart shows Dec. through March to be the most dangerous months and the former charts show the mountain areas and northern states to have the worst records. *Subject Headings:* **1. Winter flying hazards 2. United States. I. U. S. Air Weather Service.**—*M.R.*

7.5–49 551.5:797.5(061.3)

Corby, G. A., **The fifth O.S.T.I.V. Congress, Buxton 1954.** *Weather*, 9(10):312–314, Oct. **1954.** Also: Scorer, R. S., **O.S.T.I.V. 1954; Meteorology and gliding.** *Royal Meteorological Society, Quarterly Journal*, 80(346):631–634, Oct. **1954.** 11 refs. Also: Murgatroyd, R. J., **Meteorological meetings of the fifth Congress of the Organisation Scientifique et Technique Internationale du Vol à Voile.** *Meteorological Magazine*, London, 83(989):343–344, Nov. **1954.** **DWB**—Accounts of Congress at Buxton July 20–Aug. 5, 1954, with mention of papers presented on convection, turbulence, lee waves, etc. and brief summaries. *Subject Heading:* **1. Gliding congresses.**—*C.E.P.B.*

7.5–50 551.5:629.13

Barnett, Kenneth Marshall and Reber, Carl M. (*U. S. W. B.*), **Weather and the private pilot.** [1948–1949] 17+ p. 8 figs., refs. Typescript. **DWB**—Elementary discussion of

weather phenomena for use by flyers with limited means. Weather factors significant flight, such as visibility, ceiling, turbulence, precipitation, icing, etc. are described in gener terms. A few practical hints on how to obtain weather information and on how to use are given. Five references for further studies and a table of wind-force and state-of-s specifications as used in Weather Bureau forecasts are appended. Six cloud photograp extracted from U.S.W.B. Circular S (*see item* 9–13, Sept. 1950, *MAB*) are attached. *Subje Heading:* **1. Aeronautical meteorology.**—*G.T.*

AGRICULTURAL METEOROLOGY

See also: **Agricultural geography** (Görög), 7.5–11.

7.5–51 551.510.42:57(66

Cammack, R. H., **Seasonal changes in three common constituents of the air spora Southern Nigeria.** *Nature*, London, 176(4496):1270–1272, Dec. 31, **1955.** fig., 5 ref **DWB**—Air spora at Federal Dept. of Agricultural Research, Ibadan, at 6000 ft on edge lowland rain forest were sampled by spore trap 2 m above ground. Counts of 3 species showe a marked diurnal variation, with peak before noon in the dry season and after noon in the we season. Temperature and humidity were important factors in the concentration. *Subje Headings:* **1. Aerobiology 2. Ibadan, Nigeria.**—*C.E.P.B.*

7.5–52 551.526:6

Mihara, Yoshiaki, **Problems on the temperature arising from the standpoint of agr cultural physics.** *Journal of Agricultural Meteorology*, 9(1):23–26, Dec. **1953.** table. I Japanese. **MH-BH**—To increase the temperature of water in paddy fields in order to get rich harvest of rice, some fundamental problems were discussed. This is the first article in th symposium on how to increase the water temperature in paddy fields (*see also* 7.1–245, Jar 1956, *MAB*). Problems on temperature increases of water during the passage of irrigatio water through the paddy field itself, and the prevention of evaporation are discussed. *Subje Headings:* **1. Irrigation 2. Rice culture.**—*H. Arakawa.*

75.–53 551.5:63:0

Hogg, W. H., **The work of a Meteorological Office attached to the National Agricultura Advisory Service.** *Worcestershire Agricultural Chronicle*, 23(3):185–191, May/Aug. **1955 DA**—An account of the work of the Office in Bristol. This includes advice on shelter belts irrigation needs, relative frost risks, etc. *Subject Headings:* **1. Agrometeorological service 2. Great Britain.**—*C.E.P.B.*

7.5–54 551.5:6

Baumann, H., **Agrarmeteorologie und Landwirtschaft.** [Agricultural meteorology an husbandry.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:183–186 1952. 5 refs. **DWB**—A plea for increased attention to agricultural meteorology in both agricultural colleges and meteorological services. *Subject Heading:* **1. Agricultural meteorology** —*C.E.P.B.*

7.5–55 551.5:63

Barth, H., **Die Bedeutung der Grundlagenforschung für die Beratung in der Landwirtshaft.** [The importance of basic investigation for agricultural evaluation.] *Germany. Deutscher Wetterdienst in der US-Zone, Berichte*, No. 42:325–326, **1952. DWB**—Note on the necessity for cooperative agricultural meteorological research as a basis for more intensive agriculture. *Subject Heading:* **1. Agricultural meteorology.**—*C.E.P.B.*

FOREST METEOROLOGY

7.5–56 551.509.58:632.187

Graham, Howard E.; Nelson, Edward W. and Capell, John C., **Application of long wave theories to forecasting in the Portland Fire-Weather District, Pt. 1–3.** (In: U. S. Weather Bureau, [**Papers presented at the Fire Weather meetings at Portland, Ore., Feb. (March?),**

1955.] 3 pieces, separately paged 3+6+5 p. refs. Typescript.) **DWB**—Zonal wind time section charts and continuity charts are prepared twice a day at Portland in order to apply theory and research of others to 3 to 5 day forecasting of hot dry anticyclonic conditions which are serious for fire danger. These charts also aid in making 24–48 hr forecasts as they make the prognostic position of the anticyclonic centers more accurate for short range forecasting. It has been found that long waves do not progress regularly toward the E, but move 10° to 150°E when zonal flow is increasing in mid latitudes and retrograde when zonal wind maxima move well to the N or S. The third paper discusses problems encountered in applying the twice daily "canned" analyses from WBAN at Washington to local forecast requirements. *Subject Headings:* **1. Long wave theory application 2. Fire weather forecasting 3. Oregon.** —*M.R.*

7.5–57 551.509.58:632.187

*Lindquist, H. D. (*WBAS, Seattle, Wash.*), **Verification of the 1954 wind forecasts in the Washington Fire Weather District.** Paper dated March 1955. (In: U. S. Weather Bureau, **[Papers presented at the Fire Weather meeting at Portland, Ore., Feb. (March?), 1955].** 7 p. map, table. Mimeo.) **DWB**—At the end of the 1954 fire season it was decided that wind forecasts for 33 stations in western, central and northern Washington State would be verified. The forecasts were made without any regard for verification and are thus unbiased in that respect. Wind direction and speed verification, according to the criteria set forth, range from 41% (Enumclaw) to 91% (Columbia Gorge) and 12% (Port Orchard) to 93% (Quilcene), respectively. Average winds, % of time, wind 10 mph or over, variability in wind speed, and % of time forecasts gave too high speeds are tabulated for each station. It shows that tendency is to forecast too high speeds (or else anemometers are in poor locations with respect to terrain, etc.). A questionnaire to determine if forecasts were satisfactory showed that dissatisfaction existed in those few places where winds were most variable and hence forecasts considered of little use anyway. *Subject Headings:* **1. Fire weather forecasts 2. Wind forecast verification 3. Washington State.**—*M.R.*

7.5–58 551.509.58:632.187

*Hanna, Ralph T. (*WBAS, S. Francisco, Calif.*), **Upper Sacramento River drainage wind survey.** (In: U. S. Weather Bureau, **[Papers presented at the Fire Weather Meeting, Portland, Ore., Feb. (March?), 1955].** 6 p. 6 figs., table.) **DWB**—Charts show location of 11 stations in the drainage area, 8 a.m. and 3 p.m. wind flow in relation to topography and 8 a.m. and 3 p.m. wind roses at 10 stations. Data are analyzed for 9 stations for fire season of summer 1954 (34 to 77 days) and average hourly wind speeds from 7 a.m.–10 p.m. are given in a table. Brief rules derived from analysis of data are given for 10 stations, with respect to diurnal variations in wind patterns at each. Topographic variations are also discussed. *Subject Headings:* **1. Fire weather studies 2. Local wind surveys 3. Mountain-valley wind patterns 4. Upper Sacramento Basin, Calif.**—*M.R.*

7.5–59 551.509.58:6321.87

*Hanna, Ralph T. (*WBAS, S. Francisco, Calif.*), **Report on the Big Creek Wind Survey, Sierra National Forest, season of 1954.** (In: U. S. Weather Bureau, **[Papers presented at the Fire Weather Meeting, Portland, Ore., Feb. (March?), 1955.]** 6 p. 7 charts, 2 tables. Typescript.) **DWB**—A wind survey program was inaugurated in 1954 in California forests to determine how winds affect fire behavior and to determine the feasibility of using forest service personnel to supply wind information for fire weather forecasts and other activities connected with fire fighting. In the Big Creek area—about 14 miles long—9 temporary stations were maintained, during period Aug. 15–Oct. 31, 1954, using Forest Service personnel. Charts show air flow patterns for morning, noon and late afternoon, and wind roses 3 times a day for 4 stations. Wind speed and gustiness data were also obtained and compared with synoptic charts. Conclusion is that data were too few for accurate statistical evaluation and wind recorders should be installed in area with proper exposures to obtain continuous records of direction and speed for several weeks. Also full-time personnel rather than part-time, as in this survey, should be used. *Subject Headings:* **1. Fire weather studies 2. Local wind surveys 3. Mountain-valley wind patterns 4. Big Creek Drainage, Calif.**—*M.R.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATION

See also: **Meteorological observatories** (Harvard Univ. Blue Hill Visiting Comm.), 7.5–16; **Annual service reports** (Blue Hill Met. Obs.), 7.5–17; **History of Kew Obs.**, 7.5–19; **Climatological obs. at Greenwich** (Glasspoole), 7.5–20; **Panama tornadoes** (Alpert), 7.5–129; **Water supply forecasts** (Strauss), 7.5–217.

7.5–60 551.501:551.509.31

Levick, R. B. M., **Mapping the weather.** *Weather*, 10(12):inset 412–413, Dec. 1955. colored plate. **DWB**—Sets out a method of plotting sequence of weather types for a whol year along a N-S line over Britain, using colored symbols. *Subject Heading:* **1. Weathe type symbols.**—*C.E.P.B.*

7.5–61 551.501.45:551.577.3 551.578.4

*Abramova, E. I., **O dopuskakh, priniatykh pri obrabotke nabliudeniĭ nad osadkami vysotoĭ snezhnogo pokrova i oblachnost'iu.** [On the magnitude of errors acceptable in th working up of observations on precipitation, depth of snow cover and cloudiness.] *Leningrad Glavnaia Geofizicheskaia Observatoriia, Trudy*, No. 34(96):58–68, **1952.** 6 figs., 6 tables. **DLC**—Permissible errors in working up any meteorological element are determined by the precision of interpolation which depends upon the spatial variations of the element. The method for determining the spatial variability of precipitation—number of days with precipitation, depth of snow cover involved, the selection of stations from among stations with similar physical geographic conditions in regions of dense station network is described. The mean monthly precipitation amount and number of days with precipitation, mean decadal depth of snow cover, deviations of individual stations from regional mean and frequency of various magnitudes of deviations were calculated. Tables are presented showing frequency of deviation of monthly amounts of precipitation from regional mean for Nov.–March, May–Aug. frequency of deviation of number of days with precipitation >0.1 mm from regional mean; frequency of distribution of depth of snow cover for each station from regional mean, etc. *Subject Headings:* **1. Precipitation calculations 2. Snow cover depth 3. Precipitation variability.**—*I.L.D.*

7.5–62 551.501.45:681.177

Guss, H. (*Bad Kissingen*), **Die meteorologischen Lochkarten des Deutschen Wetterdienstes und ihre hauptsächlichsten Auswertungsmethoden.** [Meteorological punch cards of the German Weather Service and the principal method for their evaluation.] *Berlin. Freie Universität. Institut für Meteorologie und Geophysik, Meteorologische Abhandlungen*, 2(4):2–24, **1955.** 3 figs., 4 refs. **DWB**—A complete illustrated summary of the uses of punched cards in the German Weather Service, and the kind and size of the various types of meteorological "decks." Included are marine, climatological, aerological and synoptic cards (cards and summaries reproduced as examples). Possibilities for complete mechanization of synoptic observation punching from teletype sequences is envisioned. *Subject Headings:* **1. Punched card programs 2. Punched card methods 3. West Germany.**—*M.R.*

7.5–63 551.501.45:551.579.4

†Novotný, Jan, **Reálné podmínky možnosti výpočtů povrchového odtoku vody z deštových srážek.** [Practical conditions required for calculating runoff from rainfall data.] *Meteorologické Zprávy*, Prague, 8(2):29–35, April 30, **1955.** fig., 84 refs., eq. **DWB**—The correlation between rainfall and runoff is treated theoretically and graphically, assuming rainfall of uniform intensity over the whole catchment. Typical peak flow curves are presented. The extensive list of references is a good survey, especially of German, Russian and Czech literature on the subject. *Subject Heading:* **1. Runoff evaluation.**—*G.T.*

7.5–64 551.501.45:519.24

Sneyers, R., **Sur l'analyse des répartitions statistiques discrètes.** [On the analysis of discrete statistical distributions.] *Archiv für Meteorologie, Geophysik und Bioklimatologie,*

Ser. B, 7(1):117–132, **1955.** fig., 7 tables, 8 refs., 20 eqs. German, English and French summaries p. 117. **DWB**—In this highly mathematical paper the frequency distribution of discrete observations is shown to depend on 4 variables which readily reduce to 2. Cases studied are the binomial, Poisson, "negative binomial," logarithmic and geometric distributions. The theoretical expressions are applied to sequences of dry days at Paris, days with rain at Uccle, winter thunderstorms in Belgium, and hard frosts at Uccle. *Subject Headings:* **1. Statistical studies 2. Frequency distributions.**—*C.E.P.B.*

7.5–65 551.501.7:551.557:551.590.25

Robertson, D. S.; Liddy, D. T. and Elford, W. G. (*all, Adelaide Univ., Physics Dept., S. Australia*), **Measurements of winds in the upper atmosphere by means of drifting meteor trails, Pt. 1.** *Journal of Atmospheric and Terrestrial Physics*, London, 4(4/5):255–270, **1953.** 14 figs., 3 refs., eqs. Also: Elford, W. G. and Robertson, D. S., **Measurements . . . , Pt. 2.** *Ibid.*, p. 271–284. 9 figs., table, 9 refs., eqs. **DWB**—Pt. 1 describes some new radio techniques for the measurement of upper atmosphere winds by means of drifting meteor trails. A continuously recording Doppler-radar system operating on 27 mc is described and some typical records are analyzed. In Pt. 2 winds in the upper atmosphere have been deduced from the drifts of meteor trails by means of a continuously recording Doppler-radar system operating on 27 mc. Measurements of the average diurnal variations of the winds at known heights between 80–105 km have been obtained for each of the three months, Oct., Nov., and Dec., 1952. The winds are found to be essentially horizontal and analysis of the diurnal variations shows the presence of prevailing and periodic components of the wind. The 12 hr and 24 hr harmonic components represent anticlockwise rotation of the wind vectors; the 12 hr component is consistent with the phase of a semidiurnal tidal wind as deduced from barometric oscillations. While, at any time, the direction of the wind remains the same over the height range investigated, the mean velocity of the wind increases with height. *Subject Headings:* **1. Upper air wind measurement 2. Meteor trail drift.**—*Authors' abstract.*

7.5–66 551.501.8:551.557:551.507.2(261)

Harrison, D. N., **Radar wind comparisons on the Ocean Weather Ships (second series).** *Great Britain. Meteorological Research Committee, M.R.P.* 928, Aug. 8, **1955.** 7 p. 4 tables, ref. Mimeo. **DWB**—Trials were made in 1953–4 to assess the improvement in radar wind accuracy since 1949 by comparing observations of pairs of ships. A small improvement was found. *Subject Headings:* **1. Radar wind accuracy 2. Weather ship data.**—*C.E.P.B.*

7.5–67 523.5:551.501.81

Hines, C. O., **Diurnal variations in the number of shower meteors detected by the forward-scattering of radio waves, Pt. 1, Theory.** *Canadian Journal of Physics*, Ottawa, 33(9):493–503, Sept. **1955.** 8 figs., table, 5 eqs., refs. **DWB, DLC**—Various observational factors affect the number of shower meteors which can be detected, in a given time interval, by the scattering of radio waves from the ionized meteor trails. The pertinent factors in the case of forward-scattering, where the transmitter and receiver are widely separated, are expressed approximately as functions of the position of the shower radiant. In combination, they provide an observational weight factor which may change appreciably as the radiant moves in the course of a day. The consequent diurnal variation in the occurrence of scattered signals may then be determined, and distinguished from variations due to random changes in the incidence rate of the meteors. *Subject Headings:* **1. Radio meteor observation 2. Radio echoes from meteors.**—*Author's abstract.*

7.5–68 551.501.81:551.57

Robinson, N. P., **Measurements of the effect of rain, snow and fogs on 8.6 mm radar echoes.** *Institution of Electrical Engineers, London, Proceedings, Pt. B*, 102(5):709–714, Sept. **1955.** 4 figs., table, 18 refs., 12 eqs. **DLC.** Summary in *Institution of Electrical Engineers, London, Journal, n.s.*, No. 10:645, Oct. **1955.** **DLC**—A radar set has been used to investigate the propagation of 8.6 mm radiation through various types of weather. Measurements have been made of the attenuation caused by the precipitation particles and of the intensity of radiation scattered back. No attempt has been made to correlate the results

obtained with drop size distribution, but the results are plotted against precipitation rate. The attenuation caused by rain and the intensity of radiation scattered back by rain agree well with theoretical predictions. The echo intensity from fogs was too low to be detected but the attenuation of a corner reflector echo was measured in several fogs of different visibilities. While the results were of the same order as those predicted by theory, there was some variation, especially for fogs causing low visibility. The attenuation caused by dry snow has not been measured, but moist snow produced attenuation two and half times greater than rain of similar precipitation rate. The echo intensity returned from the "radar bright band," composed of melting snow, was 14–19 dB more than the echo intensity from the dry snow above it, and 2–8 dB more than the echo intensity from the rain below it. *Subject Headings:* **1. Precipitation effects on radar echoes 2. Radar echoes.**—*Author's abstract.*

7.5–69 551.501.9(712) 551.506.1(712)

*Canada. Meteorological Division, **Annual meteorological summary for Regina, Saskatchewan for 1954.** Prepared by the Aviation Forecast Office, Regina Airport, Regina, Saskatchewan. [1955?] 23 p. numerous tables. **DWB**—Brief history of meteorological observations at Regina (begun 1884), and 24-hourly observations (begun at Airport in 1938), topography, climate, instrumentation in detail, description of weather in year 1954 and each month; summarized data (averages, extremes, etc.) for 1954 and tables of monthly and annual temperature, precipitation, snow, relative humidity, sunshine, wind, pressure, and daily maximum minimum precipitation and snow for 1954. Comparative records for each month for total period are also given for these elements (temperature since 1884, degree days since 1940, rainfall and snow since 1890, wind speed since 1938 and sunshine for each month since 1930 (with a few breaks). *Subject Headings:* **1. Annual meteorological data summaries 2. Comparative climatological data 3. Regina, Saskatchewan.**—*M.R.*

7.5–70 551.501.9(711) 551.506.1(711)

*Canada. Meteorological Div., **Annual meteorological summary, 1954, Vancouver Airport [and] Vancouver City.** [1955] 28+14 p. numerous tables. Looseleaf. Also: **Annual meteorological summary for Vancouver Airport [and Vancouver City]. 1955.** Vancouver, B. C., Meteorological Service of Canada, [1956]. 13+28 p. mostly tables. **DWB**—The first report contains a history of weather observations at Vancouver Airport, a description of the topography of the location of the stations and of the climate, a list of the instrumentation and a descriptive summary of the weather for 1954 and of the weather for each month. Table gives the monthly means and extremes of the various meteorological variables, the daily temperature, precipitation, snowfall and long term records of the meteorological variables for Vancouver City. A supplement contains an account of the Port Meteorological Office at Vancouver City and data on the individual meteorological variables recorded during 1954. The second report contains standard description of station and summary of data for Vancouver Airport for 1955 with comparative data for 1937–1955 and same for City for 1899–1955 and for 1955. Extreme variations in precipitation within City make consolidation of records inadvisable (average at airport 40″, in City 58″, and in hilly section of N. Vancouver about 130″ a year). The extreme temperature ranges are +2.3°F to 92.4°F. Description of station and surroundings, climate and month by month summaries of 1955 weather for both airport and Port (City) are very complete. Data tables of month-by-month precipitation, snow, temperature etc. are also very extensive. (For 1951 summary, *see* 3.10–42, Oct. 1952, *MAB.*) *Subject Headings:* **1. Climatic data summaries 2. Annual meteorological data summaries 3. Vancouver, Canada.**—*I.L.D., M.R.*

7.5–71 551.501.9:551.578.4(494)

de Quervain, Marcel; Roche, Andre and Zingg, Th., **The Federal Institute for the Study of Snow and Avalanches.** *World Meteorological Organization, WMO Bulletin,* 3(1):27–28, Jan. 1954. photo. **DWB**—This Swiss institute with 6 scientists and 8 assistants, located on the Weissfluhjoch (2670 m) performs a remarkable amount of research work on the climatology and mechanics of snow in addition to a routine avalanche warning service. Cold laboratories are provided for basic research. *Subject Headings:* **1. Snow research institutes 2. Avalanche warning service 3. Weissfluhjoch, Switzerland.**—*A.A.*

OBSERVATIONAL DATA

See also **Annual met. summary bulletins** (Canada. Met. Div.), 7.5–69; **Annual met. summaries** (Canada. Met. Div.), 7.5–70; **Marine observation** (Roll), 7.5–79; **Radiation flux measurem.** (Houghton, Brewer), 7.5–142.

7.5–72 551.506:551.57(058)

*Annuaire Hydrologique de la France d'Oûtre-Mer, année 1952. [Hydrological annual Over-Seas France, 1952.] Paris, Office de la Recherche Scientifique et Technique Oûtre-er, 1954. 413 p. figs., tables. **DWB**—This yearbook contains data from 73 stations s against 46 in 1951 yearbook) in French West and Central Africa, etc. Monthly mean aximum and minimum temperatures are given for 1952 and for period of record for about 60 ations in Mauritania, Senegal, Sudan, Nigeria, Guinea, Ivory Coast, Haute-Volta, Dahomey, ogo, French Equatorial Africa, Cameroons, Madagascar, Reunion, Guadeloupe, Martinique d Guiana. Monthly and annual, or annual precipitation data are included for most stations. everal scientific articles on Evaporation; the Intertropical Front, Precipitation and Runoff French colonies are included and are abstracted separately (contents listed in *MAB*, (7):1052, July 1955). *Subject Headings:* **1. Hydrometeorological data 2. Hydrology year-ooks 3. French Overseas colonies 4. French Africa. I. Société Hydrotechnique de France I. Electricité de France.**—*M.R.*

7.5–73 551.506.1(415/9)

*Eire. Meteorological Service, **Monthly Weather Report, 1948–?** Latest issue seen, an. 1956. numerous tables. Issued in parts, in one binding, separately paged. **DWB**—Recent issues contain in Pt. I: 1) Summary of weather during the month (pressure, wind, emperature, sunshine, precipitation, fog and thunderstorms). 2) Observational data on emperature of air, grass and earth (at 2, 4, 8, 12, 24 and 48″ depths), rainfall, weather and unshine for 50 places in Ireland; 3) Summary of observations at fixed hours (pressure, dry and wet bulb, vapor pressure and relative humidity, cloud amount, wind force and direction) for 5 stations; 4) Visibility data for various fixed hours at 12 airports; 5) Summary of autographic vind records for 9 places. Pt. II gives rainfall in mm, and as per cent of average for 1881–915 at several hundred stations in the 25 counties; Pt. II, hourly values of pressure, tem-perature, relative humidity, rainfall and sunshine, wind direction and speed for 7 stations; Pt. IV, aeronautical data (ceiling, visibility and wind frequency data, etc.), for Dublin and Shannon airports; and Pt. V, upper air pressure, height, temperature and relative humidity and radar wind data for each day for standard surfaces or significant points for Valentia Observatory, Ireland. (For summary of earlier issues, *see* 3.11–40, Nov. 1952, *MAB*.) *Subject Headings:* **1. Observational data 2. Monthly data bulletins 3. Airways climatic data 4. Radiosonde data 5. Rawin data 6. Ireland 7. Valentia, Ireland.**—*M.R.*

7.5–74 551.506.1(728.4) 551.582.2(728.4)

*El Salvador. Centro Nacional de Agronomía. Sección de Meteorología, **Informe anual, 1948–1949.** [Annual Report, 1948–1949.] 2 pieces (each, separated sheets from unidentified source). tables. **DWB**—Monthly and annual values of sunshine, wind, pressure, rainfall, temperature, humidity and vapor pressure for San Andrés, Santa Tecla, and Santa Cruz Porrillo in El Salvador for 1948–49 are given in tables and discussed briefly. Comparative data for rainfall from 1944–48 are also given. A histogram shows annual variation in monthly mean precipitation for 1944–48, followed by a discussion thereof. *Subject Headings:* **1. Climatic data 2. Climate of El Salvador 3. El Salvador.**—*M.R.*

7.5–75 551.506.1(485)

*Uppsala. Universitet. Meteorologiska Institutienen, **Bulletin mensuel de l'Observatoire Meteorologique.** [Monthly bulletin of the Meteorological Observatory.] vol. 85, 1953. pub. Uppsala, 1955. 76 p. entirely tables. **DWB, DLC**—A collection of 12 monthly reports and 2 pages of annual summary of basic meteorological data, including hourly pressure, temperature, cloudiness, precipitation, wind and hydrometeors. *Subject Headings:* **1. Annual meteorological data summaries 2. Observational data 3. Monthly data bulletins 4. Uppsala University, Sweden. I. Köhler, Hilding.**—*M.R.*

7.5–76 551.506.3(261):551.507

*Hay, R. F. M., **Five year means of meteorological observations made at the ocean weath stations Item and India, Jig and Juliett, 1948–52,** *Great Britain. Meteorological Resear Committee, M.R.P.* 923, July 30, **1955.** 22 p. 13 tables, 4 refs. Mimeo. **DWB**—Month 5 year averages at Stations I (mean position 59°29′N, 19°29′W) and J (53°6′N, 19°25′W are tabulated and discussed. Tables include mean wind velocity (with other windy statio for comparison showing that averages of 17.7 and 18.3 kn were exceeded only by Adélie Lan wind frequencies by direction and force, pressure, air and sea temperature, days of phenomen frequencies of visibility and low cloud height. Some values of diurnal variation are include *Subject Headings:* **1. Weather ship data 2. Marine meteorological data 3. North Atlanti** —*C.E.P.B.*

7.5–77 551.506.8:551.583.2(5

Arakawa, Hidetoshi (*Met. Res. Inst., Tokyo*), **Twelve centuries of blooming dates of th cherry blossoms at the city of Kyoto and its own vicinity.** *Geofisica Pura e Applicata*, Mila 30(1):147–150, Jan./April **1955.** 3 tables, 2 refs. **MH-BH**—Blooming dates of the cher blossoms at the city of Kyoto (old capital of Japan) and its own vicinity are given in chron logical order extending over twelve centuries. Examination of this documentary evidenc in Japan shows a long period from 11th century until 14th century colder than the averag while the years since have been characterized by earlier blooming even though there is definite sequence of fluctuation between late and early ones. *Subject Headings:* **1. Cher blossom phenology 2. Historical climates 3. Kyoto, Japan.**—*Author's abstract.*

INSTRUMENT CARRIERS

See also: **Radar wind comparisons** (Harrison), 7.5–66; **Marine met. observations** (Hay), 7.5–76.

7.5–78 551.507.1:551.584.

Berger-Landefeldt, U. (*Berlin-Charlottenburg Tech. Univ.*), **Der Pflanzenklima-Messwagen** [Plant climate measuring truck.] *Geofisica Pura e Applicata*, Milan, 30(1):195–204, Jan. April **1955.** 3 figs., 10 refs. English summary p. 195. **MH-BH**—The use of modern measur ing instruments and methods in the field requires a suitable field laboratory with facilities fo either physical or chemical research work. For this purpose a Combi-Volkswagen was fitte out accordingly to be used as a plant climate measuring car; and the pertinent description i here given in detail. *Subject Headings:* **1. Mobile weather stations 2. Plant climate measurin truck.**—*Author's abstract.*

7.5–79 551.507.2:551.506(261)

Roll, H., **Fischereischutzboot "Meerkatze": ein Rückblick auf die ersten 50 Reisen.** [Fishery protection boat "Meerkatze." Looking back on the first 50 voyages.] *Wetterlotse* No. 94/95:208–215, Nov.–Dec. **1955.** 5 figs. **DLC**—The "Meerkatze" completed her 50th voyage on Nov. 1, 1955 after 5½ years' service in the North Sea, Iceland and Norwegian waters. The frequencies of strong winds, gales and "storm waves" are shown and some figures given of observations made and reported by radio. *Subject Headings:* **1. Marine meteorological observations 2. "Meerkatze."**—*C.E.P.B.*

7.5–80 551.507.321.2:551.558

*Morasca, Nicola, **Le componenti verticali del vento nella libera atmosfera determinate mediante il sondaggio con due teodoliti ed errori dei comuni sondaggi per effetto di tali componenti.** [Vertical components of the wind in the free atmosphere determined by sounding with two theodolites and the errors of usual sounding resulting from this component.] *Rivista di Meteorologia Aeronautica*, 13(4):19–25, Oct./Dec. **1953.** 3 figs., 2 tables. Italian, French, English and German summaries p. 19–20. **MH-BH**—Single and double theodolite wind soundings made at 10:35 on 4/28/53 at Palermo Airport (base line of 3725 m) are compared in a number of ways and the trajectory shown on a schematic cross section, indicating that a higher than usual ascent rate occurred the first 6 min. as the balloon approached Mt. Pellegrino

(506 m) and a lower or descending rate on the lee side of the mountain. Errors in speed, altitude and even direction are noted and recommendations made that 2 theodolite runs be used at airports. These would give added information about turbulence, descending winds and vertical motion. *Subject Headings:* **1. Double theodolite soundings 2. Upper air wind measurement 3. Pilot balloon accuracy 4. Verical wind velocity 5. Palermo, Sicily.**

7.5–81 551.507.362:629.19(09)

Rosen, Milton W., **Influence of space flight on engineering and science.** *Nature*, London, 176(4495):1190–1193, Dec. 24, **1955.** 8 refs. **DWB**—A short history of the theory and experiments in space travel, especially rockets, scientific uses of rockets, and artificial satellites. *Subject Headings:* **1. Interplanetary flights 2. Satellite observatories 3. Rockets.**—*C.E.P.B.*

INSTRUMENTS

See also: **Instrument manuals** (U. S. A. W. S.), 7.5–47; **Dew recorders** (Hofmann), 7.5–201; **Lightning discharge observed by electrostatic fluxmeter** (Kitagawa et al.), 7.5–247; **Lightning counters** (Pierce), 7.5–250; **Radio fading instruments** (Hirao, Maruyama), 7.5–258.

7.5–82 551.508:581.11 551.508.71

Andersson, Nils Elvir and Hertz, Carl Hellmuth (*both, Fysiska Inst., Lund, Sweden*), **Positive Spitzenentladung als Hygrometer geringer Trägheit.** [Positive point discharges as a hygrometer of small lag.] *Zeitschrift für angewandte Physik*, Berlin, 7(8):361–366, Aug. **1955.** 5 figs., 18 refs. **DLC**—An electrical discharge hygrometer, to be used for accurate and rapid measurements of transpiration from plant leaves into the surrounding air, is described in theory and in detail as to the construction, calibration, properties of the hygrometer and applications. Continuous records made for half an hour to one hour of transpiration from leaves of tomato and *Thunbergia alata*, show the sudden variations occurring when a leaf which has been illuminated for a long period is suddenly cut at its base (sharp rise followed by an even more marked drop in relative humidity of air which issues from orifice of sensitive instrument and variations which occur during normal illumination, respectively). *Subject Headings:* **1. Transpiration meters 2. Electric hygrometers 3. Corona discharge hygrometer 4. Plant transpiration measurement.**—*M.R.*

7.5–83 551.508.21:551.508.822

Albrecht, Hans J. (*Melbourne, Australia*), **A sensitive electronic tele-pyranometer with temperature-compensated capacitance bolometers.** *Geofisica Pura e Applicata*, Milan, 30(1):93–105, Jan./April **1955.** 11 figs., 8 refs., 3 eqs. English and German summaries p. 93. **MH-BH**—The paper deals, in detail, with the writer's principle of a complete electronic telepyranometer system whose remote unit comprises a radiation-sensitive oscillator, a temperature-compensating oscillator, and the transmitting section operating on a frequency equal to the intermediate frequency of the two. As the writer developed this pyranometer especially for airborne use as a radiation radiosonde, the remote unit may be as far as 200 to 1000 mi from the base station, the maximum distance being solely governed by the capability of the transmitting section and by the ionospheric propagation conditions. Comments are also made on the base station for the reception and actual reading of the pyranometer signal. In addition, various applications for the new capacitance bolometer principle are mentioned in anticipation of detailed descriptions of other apparatus based upon the principle, at a later date. *Subject Headings:* **1. Telepyranometers 2. Bolometers 3. Solar radiation instruments 4. Radiosonde pyranometers.**—*Author's abstract.*

7.5–84 551.508.21:551.521.12

Andreeva, N. A. and Marshunova, M. S., **Primenenie termoelektricheskikh balansomerov i pirgeometrov dlia opredeleniia effektivnogo izlucheniia.** [Application of the thermoelectric balance meter and pyrgeometer to determine effective radiation.] *Meteorologiia i Gidrologiia*, Leningrad, No. 4:46–48, July/Aug. **1955.** table, eqs. **DWB**—It is shown that effective radiation increases with increasing diffuse radiation and the dependence of the former upon

the latter for different latitudes is expressed by an empirical equation and illustrated da are shown in a table. The inadequacy of the diurnal measurements of effective radiation to be sought in the selective sensitivity of the apparatus, the differences in the pyrgeomet and pyrheliometric scales, etc. The characteristics of the balance meter and its use in meas ing effective radiation are discussed. *Subject Headings:* **1. Pyrgeometers 2. Pyrheliomete 3. Effective radiation.**—*I.L.D.*

7.5–85 551.508.21:551.508.

*O'Conner, T. C. (*Dublin Inst. for Adv. Studies*), **On the measurement of global radiati using black and white atmometers.** *Geofisica Pura e Applicata*, Milan, 30(1):130–1 Jan./April **1955.** fig., 2 tables, 6 refs. English and German summaries p. 130. **MH-BH** The difference in the evaporation from black and white Livingston atmometers was compar with the global radiation as measured by a Bellani spherical pyranometer. Results show th one unit (cm³) of difference in the evaporation corresponds to 20±3 cal/cm² of global radiatio The total of 95 daily values of radiation measured by pairs of atmometers differed from t corresponding Bellani figure by 2.3%. The operation of the atmometers and the accurac of the results are discussed. The method is considered sufficiently accurate for general clim tological purposes. *Subject Headings:* **1. Evaporimeters 2. Bellani pyranometer 3. Glob radiation measurement.**—*Author's abstract.*

7.5–86 551.508.21:535.

Sakayanagi, Yoshimi and Sato, Yoshiki (*both, Inst. for Optical Res., Tokyo*), **Near infrare spectrometer using a plane grating.** *Tokyo. University of Education. Institute for Optic Research, Science of Light*, 3(2):84–89, March **1955.** 5 figs., 7 refs. **DWB**—A near infrare grating spectrometer based on the Littrow mounting is described, in which a PbS cell is use as the detector. The grating has 576 lines/mm and the focal length of the collimating mirr is 60 cm. The amplifier is constructed on the basis of the principle of Wilson's feedbac with a total gain of 120 db, and the band-width variable from 100 to 5 cps. The source fo the synchronous motor for rotating the chopper is supplied by the output of an RC-oscillato *Subject Heading:* **1. Grating spectrometers.**—*Authors' abstract.*

7.5–87 551.508.29:551.508.71:551.58

Berger-Landefeldt, U., **Fast recording of temperature and vapour pressure or dew-point** *Weather*, 10(12):405–409, Dec. **1955.** 4 figs., 10 refs. **DWB**—The Askania high-speed remote control temperature and vapor pressure recorder is described and illustrated. The sensing element includes two dry 0.04 mm platinum wires and two covered by a fine wetted thread Recording is by galvanometer and is automatically corrected to give vapor pressure or dew point. A specimen record shows numerous fluctuations of temperature and vapor pressure over a period of 10 min. *Subject Headings:* **1. Resistance thermometers 2. Dew poin hygrometers 3. Micrometeorological instruments.**—*C.E.P.B.*

7.5–88 551.508.53/4 551.554

Thornthwaite, C. W., **The development of anemometers for observing wind gradients.** *Johns Hopkins Univ. Laboratory of Climatology, Publications in Climatology*, 7(2):271–276, **1954.** 4 figs., 2 refs. **MH-BH**—Difficulties experienced with conventional anomometers are distortion by turbulent fluctuations, stalling at low speeds and varying calibration curves. Careful efforts to overcome these difficulties are described. Same results of concurrent wind profile measurements on adjacent masts are given. *Subject Headings:* **1. Anemometers 2. Wind profile measurement.**—*A.A.*

7.5–89 551.508.72:551.579.4

Gur'ev, A. I., **Gidravlicheskiĭ printsip uvelicheniia masshtaba zapisi urovneĭ vody.** [Hydraulic principle to increase the scale of registration of water levels.] *Meteorologiia i Gidrologiia*, Leningrad, No. 4:49–51, July/Aug. **1955.** fig., 9 eqs. **DWB**—The author describes an apparatus for measuring evaporation from open reservoirs—namely a floating evaporimeter, the principle of which can be used to determine the variation of water level at a given point or variations in the difference of the levels without the interruption of cumbersome mechanical

devices. The apparatus is described with the aid of a diagram; its physical principles are analyzed mathematically; and the results of experimental tests are presented. *Subject Headings:* **1. Evaporimeters 2. Water level variations.**—*I.L.D.*

7.5–90 551.508.822

Malet, L. M., **The regional comparison of radiosondes at Brussels.** *World Meteorological Organization, WMO Bulletin*, 3(4):154–155, Oct. **1954.** Also in: *Ibid.*, 4(2):80–81, April **1955.** Photo, diagr. **DWB**—The first article describes the implementation of Recommendation No. 32 (CIMO-1) of the Commission for Aerology (Toronto, 1953) which became WMO Executive Commission Resolution 50(EC-IV). The Dutch, German Graw H50, American AN/AMT 2 and 4 and British Kew MKII type radiosondes were to be tested at an airfield at Evere near Brussels in Oct. 1954. The French type was not included. The second article describes the various types of radiosondes used in Western Europe and North America which were launched in comparative tests (13 daytime and 16 at night) and checked with radar sets and radio theodolites near Brussels (Evere) on Nov. 5–18, 1954. Final results of the comparison are not yet available, but preliminary examination of the results show that systematic differences exist between the various types. A diagram showing the variations with time of the height of the 100 mb surface as indicated by different instruments and a photo of a launching are included. *Subject Headings:* **1. Radiosondes 2. Radiosonde comparisons 3. WMO. Aerology Commission 3. Evere, Belgium.**—*M.R., A.M.P.*

7.5–91 551.508.822

*Kitaoka, T. and Matsuyama, T., **Accuracy of Japanese radiosonde** { S or RS / 50 or SZ / L or M

Journal of Meteorological Research, Tokyo, 7(1):16–33, March **1955.** 12 tables, 6 refs., eqs. (In Japanese; English summary p. 16. **DWB.** Also in: *Tateno, Japan. Aerological Observatory, Journal*, 5(4):245–259, March **1954.** In English. **MH-BH**—This study contains a statistical analysis of the errors of pressure heights and temperatures at standard levels essential for drawing and analyzing upper charts. Examples of pressure corrections for particular test ascents, the results of twin soundings for each pressure, and temperature comparison of temperature between soundings, etc., are presented in tables. *Subject Headings:* **1. Radiosonde errors 2. Radiosonde corrections 3. Japanese radiosondes.**—*Based on authors' abstract.*

SYNOPTIC ANALYSIS AND FORECASTING

See also: **Weather forecasting** (Zharkov), 7.5–8; **Long wave theory application** (Graham et al.), 7.5–56; **Fire weather forecasts** (Lindquist), 7.5–57; **Fire weather studies** (Hanna), 7.5–58; **Fire weather studies** (Hanna), 7.5–59; **Mapping the weather** (Levick), 7.5–60; **Discontinuity surfaces analysis** (Emsalem), 7.5–134; **Long range forecasting** (Nagao), 7.5–150; **Forecasting techniques** (Iwata), 7.5–158; **Water supply forecasts** (Strauss), 7.5–217.

7.5–92 551.509(02)

Canada. Meteorological Div., **MANTEC: Manual of technical procedures and practices for forecast office operation.** 1st ed. effective Jan. 1, 1955. Its *CIR*-2562, 0–42, Jan. 1, **1955.** 119 p. forms. Price: $2.00. **DWB**—A comprehensive manual for plotting surface, constant pressure, thermodynamic, wind-shear hydrograph, frontal contour, tropopause and other charts; for analyzing most of these as well as pressure change and height change charts; for preparation of charts for facsimile and ozalid reproduction, for constructing surface and upper air prognostic charts, for coding and decoding analyses, and for displaying or issuing charts and weather maps. Symbols, specifications, analyses, and samples of analyzed charts are appended. *Subject Headings:* **1. Synoptic chart preparation 2. Forecasters manuals.** —*M.R.*

7.5–93 551.509

Great Britain. Meteorological Office. **Handbook of weather messages, pt. 1, Transmission schedules and station index numbers.** 2nd ed. London, H.M.S.O. **1955.** 114 2 figs., mainly tables. At head of t.p. *M.O.* 510a. **GB-MO**—Includes transmission schedul for all issues from U.K., including shipping and aviation, Gibraltar, Malta, Cyprus and O.W. I and J. Station numbers are given for Europe, Middle East, Canada, U.S.A. and Atlant Islands. *Subject Headings:* **1. Synoptic transmissions 2. Synoptic networks.**—*C.E.P.B.*

7.5–94 551.5(09) 551.509

Tannehill, Ivan (*U. S. W. B.*), **The meteorological year of 1954.** *Weatherwise*, 8(1):3– Feb. **1955.** 3 photos. **DWB**—The author mentions some 1954 weather anomalies such a temperature extremes, tornadoes, drought, etc., various events in the development of me teorology such as the start of the Joint Numerical Weather Prediction Project in the Unite States, preparation of daily synoptic charts for the Southern Hemisphere in South Africa development of climatic relations in the United States, etc. *Subject Headings:* **1. Progress i meteorology 2. Joint Numerical Weather Prediction Project 3. Southern Hemisphere Proj ect (South Africa).**—*I.L.D.*

7.5–95 551.509.3

Bolotinskaia, M. Sh., **K voprosu ispol'zovaniia 20% amplitudy v kachestve kriterii otsenki opravdyvaemosti dolgosrochnykh prognozov pogody.** [Utilization of 20% amplitud as a criterion for evaluating the reliability of long range weather forecasting.] *Meteorologiia Gidrologiia*, Leningrad, No. 1:28–30, Jan./Feb. **1955.** table, 3 refs. **DWB**—For series o observations up to 25 years the 20% amplitude may differ considerably from the mean squar deviation. With increasing number of observations new extreme years may appear so tha the magnitude of the amplitude may change sharply; the reliability of forecasts changes the independently of the quality of the forecasts. This criterion is not always practical sinc it demands greater precision but permits forecasts with very large errors. *Subject Headings:* **1. Long range forecasting 2. Forecast accuracy.**—*I.L.D.*

7.5–96 551.509.33

Namias, Jerome, **Long range weather forecasting by high-speed computing methods.** *Science Progress*, 44(173):71–81, Jan. **1956.** 3 figs., 3 refs. **DWB**—Long range forecasters have to deal with time averages rather than individual perturbations. A Northern Hemisphere map of mean 700 mb contours for Jan. 1950, and tracks of 700 mb and sea level high from Nov.–Dec. 1949 to March 1950 are shown. The movement of 5 day or 30 day centers from map to map is similar to the daily movement of disturbances. The causes are not understood but trends can be estimated in various ways and extrapolated to give a prognostic chart. Vorticity redistribution can be computed by high speed machines, which can also interpret the prognostic charts in terms of weather. *Subject Heading:* **1. Long range forecasting.**—*C.E.P.B.*

7.5–97 551.509.33

Philipps, H., **Az időjárás közepes és hosszabb időtartamú előrejelzésének kérdéseiről.** [Problems of extended and long-range forecasting.] *Időjárás*, Budapest, 58(6):363–372, Nov./Dec. **1954.** Russian and French summaries p. 363. Transl. by István Kleszky. **DWB**—Also: complete German version: **Allgemeine Betrachtungen zum Problem der mittel- und langfristigen Witterungsvorhersage.** *Acta Agronomica*, Budapest, 5(1/2):129–143, **1955.** Russian and English summaries p. 142–143. **DA**—The author critically reviews the long-range forecasting methods hitherto used. He finds that no satisfactory results are obtained from methods based either on exact mathematical-physical principles, those derived from analogy, or from singularities. Some improvement may be expected from a combination of such methods, but especially from large-scale dynamics based on classical theories. The author emphasizes that actual close collective operation is one of the principal conditions of better results. *Subject Headings:* **1. Long range forecasting. I. Kleszky, István** (*Trans.*)—*Trans. of author's abstract.*

7.5–98 551.509.33:551.553.21(54)

†*Ramdas, L. A.; Jagannathan, P. and Gopal Rao, S. (*all, Met. Office, Poona*), **Prediction of the date of establishment of southwest monsoon along the West Coast of India.** *Indian Journal of Meteorology and Geophysics*, Delhi, 5(4):305–314, Oct. **1954.** 4 figs., 6 tables, 23 refs. **DLC**—Dates of establishment of southwest monsoon are tabulated for 1891–1950 for 4 sections of the West Coast of India, and the data analyzed statistically and shown graphically. The variability in time of onset averages about a month between extreme cases, and the standard deviation is about a week. Correlation coefficients work out for 1899–1950 with Seychelles rain (April), Agro winds (first half of May), Darwin pressure (April), S. Rhodesia rain (Oct.–April) and (April), Java rain (Oct.–Feb.), etc. Combinations of these are used to establish a formula and results of calculations from formula are shown graphically for each year (1891–1950) in comparison with actual observation. Only about 7 cases out of 60 were over a week off one way or another. Forecasts for 1951–54 are given and verification discussed. *Subject Headings:* **1. Monsoon forecasting 2. Southwest monsoon onset 3. India.** —*M.R.*

7.5–99 551.509.33:551.509.318

§Topor, N., **A távidőjelzés kutatása a Román Népköztársaságban.** [Research on long-range forecasting in Rumania.] *Időjárás*, Budapest, 58(6):380–396, Nov./Dec. **1954.** 34 figs., 2 tables. Russian and French summaries p. 380. Transl. by L. Avjeszky. **DWB**—Also: complete German version: **Die langfristige Wettervorhersage in der Volksrepublik Rumanien.** *Acta Agronomica*, Budapest, 5(1/2):163–186, **1955.** Russian and English summaries p. 186. **DA**—In Romania systematic research on long range forecasting was started in 1951 by a small research group. A card file was prepared from Romanian observational data for the period 1889–1951. Sixteen pressure and circulation types were determined on the basis of U. S. Weather Bureau Historic Weather Maps (1889–1939) and Romanian synoptic weather maps (1939–1951). This paper contains a detailed description of the 16 circulation types and their frequency distribution in Europe, with particular reference to their effect on weather in Romania. *Subject Headings:* **1. Long range forecasting 2. Synoptic types 3. Rumania. I. Aujeszky, László** (*Trans.*).—*G.T.*

7.5–100 551.509.58:551.576.1

James, D. G., **Investigations relating to cirrus cloud.** *Great Britain. Meteorological Research Committee, M.R.P.* 933, Sept. 1, **1955.** 10 p. 6 figs., 13 tables, 9 refs. Mimeo. **DWB**—Observations of cirrus from aircraft over the British Isles were analyzed for frequency distribution of tops and bases relative to tropopause, heights of base and thickness. Ten cases (in 220) had tops above 40,000 ft. The surface charts, upper air soundings, 1000–500 mb thicknesses, advection vorticity at 300 mb and 300 mb contours were also examined. Cirrus was associated with the area ahead of surface fronts, the high pressure side of the jet stream, thermal ridges, high humidities at 500–300 mb, winds between S and W at 500–300 mb (advection of warm air) and positive cyclonic vorticity at 300 mb. *Subject Heading:* **1. Cirrus forecasting.**—*C.E.P.B.*

7.5–101 551.509.59:551.54

Bontrond, E. A. (*Service Mét. de Metropole et d'Afrique du Nord, Paris*), **Contribution à l'étude d'un problème de prévision barométrique. Rapports des profondeurs de noyaux de variation de pression d'intervalles différents lorsque l'onde de variation ne peut être assimilée à une sinusoïde simple.** [Contribution to the study of the problem of barometric forecasting. Relationships of the depths of the centers of pressure variation of different intervals when the wave of variation cannot be assimilated to a single sine wave.] *Journal Scientifique de la Météorologie*, Paris, 6(22):49–58, April/June **1954.** 6 figs., 5 refs., 7 eqs. **DWB**—The French method of barometric forecasting utilizes the relationships existing among the depths of the nuclei of pressure variations at different intervals on the assumption that the wave of pressure variation is a sine wave. This article is a study of the extent to which these relationships are modified when the wave of variation is considered as the superposition of a sine wave variation over a linear variation or as of two sine wave variations of different periods

and amplitudes. *Subject Headings:* **1. Pressure forecasting 2. Pressure variations.**—*Tra of author's abstract.*

7.5–102 551.509.67:51

Jenkinson, A. F., **Some statistical aspects of a rain-making experiment.** *Great Brita Meteorological Research Committee, M.R.P.* 931, Sept. 14, **1955.** 15 p. 18 figs., 13 tabl 7 refs. Mimeo. **DWB**—The problem is to test results of seeding with silver iodide on Sal bury Plain. The location of the plume and vertical and horizontal extent of effective seedi in cloudy frontal conditions are discussed. From rainfall statistics on 92 selected occasic in 1945–54 it is concluded that if the trials are made with 5 generators on a line of 20–25 on suitable occasions, a difference of 13% between rainfall of known seeded and control are would be significant at 1% level. If the seeded area is not known, a difference of 25–30 would be required. *Subject Headings:* **1. Cloud seeding evaluation 2. Statistical techniqu 3. Salisbury Plain, Eng.**—*C.E.P.B.*

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

ATMOSPHERIC POLLUTION

See also: **Aerobiology** (Cammach), 7.5–51; **Freezing nuclei measurem.** (Smith et al), 7.5–200; special bibliography on **Atmospheric Radioactivity,** p. 616.

7.5–103 551.510.42:551.593.55:551.524

Bigg, E. K., **Detection of atmospheric dust and temperature inversions by twilight sca tering.** *Nature,* London, 177(4498):77–79, Jan. 14, **1956.** 3 figs., 3 refs. **DWB**—Apparat was set up at Alice Springs, Australia, for measuring dI/Idt (I=red and infrared twilig illumination) for different heights of the earth's shadow. There was a large maximum 15 km (temperature inversion and dust boundary), and a smaller one near 80 km. This als coincides with a temperature inversion and is attributed to meteor dust, the maxima coincidi with meteor showers. *Subject Headings:* **1. Dust layers 2. Twilight phenomena 3. Upp air temperatures 4. Alice Springs, Australia.**—*C.E.P.B.*

7.5–104 551.510.53

Brewer, A. W., **Ozone concentration measurements from an aircraft in N. Norwa** *Great Britain. Meteorological Research Committee, M.R.P.* 946, Nov. 22, **1955.** 3 p. 4 figs ref. Mimeo. **DWB**—Ascents with a thermometer, dew point hygrometer and ozone sample were made to 40,000 ft from Trondheim on June 27 and 28 and July 3 and 11, 1955. Th results, shown graphically, indicate a 3-fold increase in ozone concentration above the tropo pause. *Subject Headings:* **1. Ozone distribution in upper atmosphere 2. Norway.**—*C.E.P.B*

UPPER ATMOSPHERE—IONOSPHERE

See also: **Scatter propagation** (Norton, Wiesner), 7.5–1; **Upper air temp. periodicities** (Morton), 7.5–159; **Stratospheric winds** (Bannon, Jones), 7.5–191; **Tropospheric refraction** (Tao), 7.5–260.

7.5–105 551.510.534:551.557.

†Dütsch, H. U., **Das atmosphärische Ozon als Indikator für Strömungen in der Strato sphäre, I, Die photochemischen Grundlagen.** [Atmospheric ozone as an indicator of current in the stratosphere, Pt. 1, Photochemical basis.] *Archiv für Meteorologie, Geophysik un Bioklimatologie, Ser. A,* 9(1):87–119, **1956.** 12 figs., 12 tables, 34 refs., 15 eqs. German English and French summaries p. 87–88. **DWB**—A radiation chart is developed for evaluating the number of dissociating photons/cm²/sec. With this the ozone distribution, in equilibrium or nonequilibrium, due entirely to photochemical processes is calculated from 15–50 km and 0–80° lat. (summer and winter) using stratosphere temperatures given by rockets and calculated by PENNDORF. These are compared with rocket and balloon measurements of ozone. They show the course of variation to be expected in an atmosphere without meridional or

vertical currents or turbulence. The photochemically induced diurnal variation, and the nocturnal increase in 50–80 km due to secondary O_3 formation from atomic O, are also calculated. *Subject Headings:* **1. Ozone variations 2. Stratospheric winds.**—*C.E.P.B.*

7.5–106 550.385:551.510.535:551.594.13

Wiese, Horst, **Die ionosphärischen Stromwirbel erdmagnetischer Baistörungen.** [The ionospheric ring current of geomagnetic bay disturbances.] *Beiträge zur Geophysik*, Leipzig, 65(1):70–85, 1955. 14 figs., 19 refs., 6 eqs. **DWB**—The course of various bay disturbances is generalized synoptically. There are wandering whirls, roughly analogous to the electric dipole postulated by FUKUSHIMA (1953). Given the latitude of the dipole the geomagnetic longitude of the dipole can be calculated from the disturbance at any place. For 64 bay disturbances investigated in this way a position and direction of motion of the dipole was found, dependent on the time of day. Deviations of the bay current system from the dipole system can be minimised by assuming an additional S_V field. In contrast to the dipole there is also outside the auroral zone a ring-like band of increased current density. Possible origins of bay disturbances are considered. *Subject Headings:* **1. Geomagnetic disturbances 2. Ionospheric currents.**—*Transl. of author's abstract.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

See also: **Dynamics of atmos.** (Sutcliffe), 7.5–119; **Atmos. radiation measurem.** (Roach), 7.5–139; **Solar energy transformation** (Budyko), 7.5–141; **Mean winter and summer isobaric field** (Mironovitch), 7.5–169; **Moisture exchange in atmos.** (Budyko, Drozdov), 7.5–193.

7.5–107 551.511:551.554

Arkhangel'skiĭ, V. L., **O vysote urovnia treniia v usloviiakh srednegornogo rel'efa.** [The height of the friction level in hilly country.] *Meteorologiia i Gidrologiia*, No. 2:26–28, March/April, 1955. 3 tables, 4 refs. **DLC**—Pilot balloon observations from various points of eastern Siberia were used to determine the height of the friction level in a region of moderately high mountains. The friction layer was taken as the height at which the increase in wind velocity diminishes and the rotation of the wind to the right ceases. It is shown that most frequently friction is most effective at a height of 750–900 m and that the mean coefficient of exchange in the friction layer in the moderate latitudes of eastern Siberia is 50 g/cm sec. *Subject Headings:* **1. Friction layer 2. Wind profiles 3. Orographic influences 4. Eastern Siberia.**—*I.L.D.*

7.5–108 551.511:551.513.1

Bohme, W. (*Met. and Geogr. Inst., Humboldt Univ., Berlin*), **Die Abhängigkeit der charakteristischen Grössen einer thermisch bedingten Zirkulation von den die näheren Umstände beschreibenden Parametern im Falle gewisser quasistationärer Zirkulationen.** [Dependence of characteristic magnitudes of a thermally induced circulation upon parameters describing the more immediate conditions in the case of certain quasi-stationary circulations.] *Zeitschrift für Meteorologie*, 8(10):289–303, Oct. 1954. 3 tables, 13 refs., 97 eqs. **DWB**—As in the previous paper (*see* 6.1–123, Jan. 1955, *MAB*), the author considers circulations which are produced in a resting and isothermal atmosphere by periodic heat sources distributed periodically at the earth's surface. An approximate solution is presented for these cases where a transition from a nonstationary periodic solution to a quasi-stationary (periodic) solution is possible and where simultaneously the factor W/H can be neglected over against D_2W. Formally this transition is allowed by neglecting the local time observations from the initial differential equations. The quasi-stationary time dependent solution simply represents a series of stationary states so that the thermally produced circulation can be treated theoretically with the aid of large scale exchange in circulations having cells of large horizontal extension, the transition of Guldberg-Mohn friction to turbulence friction, considerations of the spherical stage of the earth, etc. *Subject Headings:* **1. Atmospheric circulation theory 2. Dynamic meteorology 3. Quasi-stationary circulation.**—*I.L.D.*

7.5–109 551.511:551.5

†Businger, J. A., **On the structure of the atmospheric surface layer.** *Journal of Meteorology*, 12 (6):553–561, Dec. 1955. 3 figs., 2 tables, 22 refs., 35 eqs. **DWB**—Starting with L. PRANDTL's theory of mixing length, leading to the logarithmic wind profile, the work of G. HAMEL, etc., the 2 equations of transfer of momentum and heat are reduced to form containing 3 unknowns, K, $\bar{u}$ and $\bar{\theta}$. The possibility of finding the necessary third equation is approached by introducing a nondimensional stability number. This is tested by wind profiles for various stabilities observed by N. E. RIDER. *Subject Headings:* **1. Turbulence in the frictional layer 2. Wind profile theory.**—*C.E.P.B.*

7.5–110 551.511:51

Demiańczuk, P. P., **Nota odnośnie rozwiazania całki określającej pionową energię chwiejnosci powietrza.** [A note concerning the solution of the integral determining the vertical energy of air instability.] *Poland. Państwowy Instytut Hydrologiczno-Meteorologiczny, Wiadomości Służby Hydrologicznej i Meteorologicznej*, 3 (4):297–302, 1954. figs., 3 tables, 14 eqs. Russian and French summaries p. 301–302. **DLC**—A highly theoretical paper in which, after having questioned the correctness of the solution of the integral determining the vertical energy of air instability introduced by T. KOPCIEWICZ in his book **Physics of the Atmosphere,** the author presents a general solution of the integral, as well as two special solutions resulting from the general solution. The first of them pertains to the case of division of the air surface comprised between the actual curve and the curve of virtual temperature for moist air in layers of 100 mb thickness, by interval lines crossing the isobars 1000 mb, 900 mb, 800 mb, etc. The second solution has a very simple mathematical form and can be easily solved on a thermodynamic diagram. *Subject Headings:* **1. Instability criteria 2. Integral equations.**—*A.M.P.*

7.5–111 551.511:551.576.2:551.577

Duvedal, T., **Relation between horizontal advection, total amount of cloudiness and precipitation.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9 (1):19–21, 1956. 7 tables, 6 refs. German and French summaries p. 19–20. **DWB**—At Stockholm and Leuchars, 1952–53, horizontal advection was computed from winds at 950 and 500 mb and compared with cloud amount. It is found that overcast sky and precipitation are usually but not always associated with advection of warm air, little or no cloud with cold air. Therefore warm air advection (or cold air above warm air) usually implies ascent, cold air (or warm air above cold air), subsidence. The relation is less marked in summer than in other seasons. *Subject Headings:* **1. Tropospheric advection 2. Advection effects on cloudiness.**—*C.E.P.B.*

7.5–112 551.511:551.55

Estoque, Mariano A. (*Johns Hopkins Univ.*), **The spectrum of large-scale turbulent transfer of momentum and heat.** *Tellus*, Stockholm, 7 (2):177–185, May 1955. 4 figs., 1 table, 13 refs., 27 eqs. **DLC**—A method for obtaining the spectrum of turbulent transfer of a fluid property is presented based on cross-correlations and Fourier transforms. An application to large-scale eddy transfers of momentum and heat at 850 mb over the southeastern part of the United States shows that most of the transfers may be attributed to disturbances of periods from 0 to 10 days, the most important transfers occurring in the neighborhood of 4 days. Some implications of these results on the problem of the general circulation are discussed. *Subject Headings:* **1. Turbulent transfer of heat 2. Turbulent transfer of momentum 3. Turbulence spectrum.**—*Author's abstract.*

7.5–113 551.511:523.74:538.

Lehnert, B. (*Royal Inst. of Techn., Stockholm*), **Magnetohydrodynamic waves under the action of coriolis force, Pt. 2.** *Astrophysical Journal*, Chicago, 121 (2):481–490, March 1955. 7 refs., 72 eqs. **DLC**—The phase velocity of a single plane magnetohydrodynamic wave in a rotating liquid is independent of the amplitude. The nonlinear interactions between the components of the spectrum of a complex traveling disturbance vanish only in a nonrotating fluid without dissipation. A criterion for the approximate validity of the principle of superposition is given for small values of the Coriolis force and the dissipation. In a rotating

edium in a magnetic field a disturbance will not necessarily travel along the magnetic field nes. The anisotropic group velocity for a wave packet is given. In solar physics the effect anisotropic dispersion and monolinearity are significant for disturbances with wave lengths the order of a hundredth of the solar radius, if a dipole field with a polar strength of less than 5 gauss is assumed. *Subject Headings:* 1. **Magneto-hydrodynamic waves** 2. **Coriolis force.** —*Author's abstract.*

7.5–114 551.511:551.515.11

Raethjen, P., **The five types of vorticity-variation and cyclogenesis.** *I.U.G.G. Association of Meteorology, Brussels, 1951, Proces-Verbaux des Séances. Mémoires et Discussion.* . 78–80. pub. Brussels, Dec. **1953.** eqs. **DWB**—Applying BJERKNES' circulation theorem nd STOKES' integration theorem and assuming a nearly geostrophic wind, the author derives n equation for the change of relative vorticity with time, which shows five components due o variations in latitude, horizontal convergence, frontal shear, gliding exchange and vertical ind gradients. All components contribute to cyclogenesis. *Subject Headings:* 1. **Cyclogenesis** 2. **Vorticity equations.**—*A.A.*

7.5–115 551.511:551.521

Robinson, G. D., **The energy balance of surface and atmosphere at Kew, May 1953 to April 1954.** *Great Britain. Meteorological Research Committee, M.R.P.* 929, Sept. 10, **1955.** 8 p. 3 figs., 6 tables, 24 refs. Mimeo. **DWB**—Trial measurements from the ground of the radiation flux over the whole atmosphere were made in preparation for the International Geophysical Year. Determination of the albedo (photometric, visual and UV, and infrared) under various assumptions as to absorption, etc. gave estimates of: year 0.475, summer 0.46, winter 0.525. Terrestrial radiation at the limit of the atmosphere is set at 20 ± 3 mw. cm^{-2}. Terms in the energy budget are computed for year, summer and winter. It is concluded that measurements during the I.G.Y. can be made with useful accuracy, which can be improved by measurements in the air, but in view of the year-to-year variations some stations should operate for at least 5 yrs. *Subject Headings:* 1. **Energy balance** 2. **Kew Observatory, London.** —*C.E.P.B.*

7.5–116 551.511:551.552

Sawyer, J. S., **Dynamical similarity in an incompressible fluid model of two-dimensional airflow over a ridge.** *Great Britain. Meteorological Research Committee, M.R.P.* 935, Sept. **16, 1955.** 7 p. 3 refs., 21 eqs. Mimeo. **DWB**—To overcome the difficulty that air is compressible, to simulate a flow of air over a range of hills a model is examined in which an incompressible fluid flows through a narrow channel tapering upwards. *Subject Heading:* 1. **Air flow models.**—*C.E.P.B.*

7.5–117 551.511:523.72

Skumanich, Andrew *(Princeton Univ. Observ.)*, **On thermal convection in a polytropic atmosphere.** *Astrophysical Journal*, Chicago, 121(2):408–417, March **1955.** 3 figs., 4 tables, 2 refs., 21 eqs. **DLC**—Thermally induced convection is investigated in an atmosphere with a strong density variation from top to bottom, such as is found in the hydrogen convection zone of the sun. The atmosphere is assumed to be initially stratified in horizontal planes and to follow the polytrope law, $P\alpha_p^{\Gamma}$. Viscosity and heat conduction are ignored, the perturbations are assumed to be adiabatic, and the perturbation equations are linearized. It is found that in a polytropic atmosphere—in contrast to the classical case of a homogeneous atmosphere—the speed of development of a perturbation increases persistently with decreasing horizontal wave length of the perturbations, even for wave lengths shorter than the thickness of the atmosphere. Thus in the solar hydrogen convection zone, small element sizes are to be expected to predominate. *Subject Headings:* 1. **Convection** 2. **Solar atmosphere.**—*Author's abstract.*

7.5–118 551.511

Wippermann, F., **Numerische Untersuchungen zur zeitlichen Änderung der Spektralverteilung kinetischer Energie für eine zweidimensionale, divergenz- und reibungsfreie**

Strömung. [Numerical investigations of the time-change of the spectral distribution kinetic energy for a two-dimensional, divergence- and friction-free current.] *Archiv f Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1):1–18, **1956.** 9 figs., table, 7 ref 12 eqs. German, English and French summaries p. 1–2. **DWB**—Changes of the wave leng spectrum of kinetic energy are calculated by a process of step integration of the vortici equation, using a latitude zone between 22.8° and 79.4°N, and beginning with several arbitra distributions. The energy is provided by the potential energy of cyclones and anticyclon and dissipated at the short wave end. After about 4 days a double maximum appears, agreement with CHARNEY's observations. Energy transfer oscillates between basic curre and disturbances in a period of 3½–4 days. *Subject Heading:* **1. Kinetic energy spectrum atmosphere.**—*C.E.P.B.*

GENERAL CIRCULATION

See also: **Atmos. circulation theory** (Böhme), 7.5–108.

7.5–119 551.513:551.51

Sutcliffe, R. C., **Large-scale weather processes.** *Nature*, London, 177(4499):113–11 Jan. 21, **1956.** **DWB**—Summary of 3 lectures. He first described 3-dimensional structur including the upper air pressure field and jet streams. He then turned to variability in middl latitudes, divergence and vertical motion. The direct approach through divergence is im practicable but the dynamics can be built up through vorticity. This led to the conceptio of large-scale instabilities and exponential growth of disturbances as the normal state of th atmosphere. The third lecture dealt with problems of the general circulation, balance c heat, water and momentum, and mechanism, including the relative importance of stead mean circulations and irregular motions. *Subject Headings:* **1. Atmospheric circulatio 2. Dynamics of the atmosphere.**—*C.E.P.B.*

7.5–120 551.513.1:551.54

*South Africa. Weather Bureau, **Southern Hemisphere Project, Sept., Oct., Nov., 1953 Tables, diagram and charts.** Its *Notos*, 3(4):294–362, **1954.** **DWB**—Usual extensive tabula tion of daily and monthly mean sea level pressure for 10° long strips 0–350°E at lat. 15°, 20° 25°, 30°, 40°, 45°, 50°, 55°, 60°, 65° and 70°S; mean monthly geopotential of 500 mb surface mean monthly 1000–500 mb thickness; daily sea level zonal index and meridional index plus monthly and seasonal mean charts for Southern Hemisphere of sea level pressure (wit inset showing meridional profile), 500 mb geopotential and 1000–500 mb thickness. Th project was organized by the South Africa Weather Bureau and combined with M.I.T. Southern Hemisphere Project in 1953(?). *Subject Headings:* **1. Southern Hemisphere Project (South Africa) 2. Monthly mean pressure charts 3. Meridional profiles 4. Zonal index.**—*M.R.*

7.5–121 551.513.2:551.557(567, 62)

Harding, J., **The profile of jet streams in the Middle East.** *Great Britain. Meteorological Research Committee, M.R.P.* 932, Aug. 31, **1955.** 11 p. 16 figs., 4 refs. Mimeo. **DWB**—Ground photos from airplanes between Habbaniya and Bahrain, Port Said and Wadi Halfa and air speed gave wind direction and speed. Eleven "Windy Runs" are discussed. "The strong westerly winds over the Middle East in winter, at heights approximating to those of maximum wind speeds, contain a belt of very strong winds which may be as wide as 200 nautical miles or more, and in which horizontal gradients of wind speed are small or negligible." Surface and 200 or 300 mb charts and wind profiles showing winds of 100–200 kn are given for Jan. 28 and Feb. 6, 1953, Jan. 16 and Feb. 25, 1954 and March 5, 1955. *Subject Headings:* **1. Jet stream profiles 2. Iraq 3. Egypt.**—*C.E.P.B.*

7.5–122 551.513.2:551.557(266)

Hoyle, H. D., **The sub-tropical jet-stream of the eastern North Pacific in January and April 1952.** *Great Britain. Meteorological Research Committee, M.R.P.* 924, June 28, **1955.** 8 p. 16 figs., 8 refs. Mimeo. **DWB**—A thorough analysis is made of the 2 jet streams in the N. Pacific. Daily schematic charts, 60–15°N, 180–120°W show the positions of jets (> 100 kt) at 300–400 mb near the polar front and 200 mb 1000 mi south. Vertical cross sections in

50–150°W show (by isovels, isotherms and fronts) 3 types of probable structure (strong W-E jet near Hawaii, weaker jet with N component, and subtropical jet displaced northward). The 250 or 300 mb and 60 mb isotherms, contours of various surfaces, and mean surface isobars are also plotted as means for month and for different types. The jets show pronounced near and are associated with 3 tropopause levels, tropical (90 mb), subtropical (200 mb) and polar (300 mb). *Subject Headings:* **1. Jet stream variations 2. Subtropical jet stream 3. Pacific jet stream 4. Eastern Pacific.**—*C.E.P.B.*

7.5–123 551.513.2:551.557:629.13

The jet stream. *New York Times Magazine*, Section 6, p. 40, Jan. 2, **1955. DWB**—A concise summary of the nature and cause of the jet stream and its use in Pacific and Atlantic air navigation. The Atlantic jet stream is said to be too irregular for much aid in flying, though the Pacific jet has proved to be very useful in eastbound flights from Tokyo. *Subject Headings:* **1. Jet stream flying 2. Atlantic jet stream 3. Pacific jet stream.**—*M.R.*

7.5–124 551.513.2:551.557

*§Serebreny, Sidney; Wiegman, Eldon J. and Carlson, Wilbur F., **Characteristic properties of the jet stream over the Pacific, Case history No. 1, Pt. 2.** Pan American World Airways. Pacific-Alaska Div. Meteorology Dept., Contract N189s-96835, Technical Report, No. 4, Sept. **1954.** 161 p. 66 figs. (1 fold.), 12 refs. Also their: **Characteristic properties of the jet stream over the Pacific, Case history No. 2, Pt. 2.** *Ibid.*, Technical Report, No. 3, Aug. **1954.** 157 p. 66 figs. (1 fold.), 4 tables, 14 refs. **DWB**— These two elaborate case history studies (Case I for a high index and Case II for a low index case) cover the periods Feb. 7–15, 1953, and Feb. 25-March 5, 1953, respectively. The Polar Front model of BERGGREN (1953) is verified in analyses of surface, 300, 200 and 100 mb level for the Pacific area. The Polar Front is shown to reverse itself above 250 mb level equatorward. Absence of horizontal temperature gradients at the Jet Stream core and stable lapse rates south of the Polar Jet are noted. The trajectories of the Polar and Subtropical Jet across the Pacific are noted and soundings, isotach and other charts used to illustrate these movements. Periodic intrusions of Polar air from Siberia were shown to reinforce and sustain the Polar Jet Stream at relatively low latitudes as far east as Midway during the period Feb. 7–15. *Subject Headings:* **1. Pacific jet stream 2. Polar fronts 3. Pacific Ocean.**—*From authors' abstract.*

7.5–125 551.513.2:551.557

*Serebreny, Sidney M. (*Pan American World Airways*), **The jet stream structure over the Pacific.** *Navigation*, Los Angeles, 4(6):231–241, June **1955.** 10 figs., 2 tables. **DLC**—A table gives location, temperature, wind and D-values for 8 positions of a PAA trip on Feb. 3, 1954 at 25,000 ft. from 150°E to 161°W, showing a broad band over 720 miles wide (12°) with winds 106 to 132 kn. The Polar Jet stream (as distinct from the sub-tropical or Arctic jet stream) is the most concentrated. In this region (the zone of Maximum Concentration) which is called the ZOMCOT is designated by the area at 500 mb where temperature is from 3° warmer to 7° colder than the standard temperature for the level. On Feb. 10, 1953 a change in wind speed of 55 kn in 24 miles on the north side was reported at 22,000 ft (temperature change was 11°C), whereas similar data for Feb. 15, 1953 shows a more gradual change (2°C and 35 knots in 90 mi). On Dec. 28, 1954, a complete log (shown in tables and cross section as well as on a chart) gave a change of 100 kn (185 to 85 kn) in 1,000 ft elevation (23.2 to 24.2 thousand feet) but only 2°C change in temperature although D-value changed from 275 to 925. The Polar Jet is wider the higher you go, reaching a maximum from 35 to 40 thousand feet and diminishing above 45,000. Turbulence is more intense above than below the core, and in strong than weak gradients, or winds. The wind shear is also much greater above than below the core. Several schematic models of jet stream features are included. *Subject Headings:* **1. Jet stream structure 2. Jet stream navigation 3. Western North Pacific.**—*M.R.*

7.5–126 551.513.2:551.557:656.7(265)

Stieflemaier, C. A. (*Pan American World Airways*), **Operational aspects of the jet stream.** *Navigation*, Los Angeles, 4(6):227–231, June **1955.** fig. **DLC**—On the Tokyo-Honolulu air

route, Pan American pilots use several specially designated routes to make the best use the westerly jet stream when it is present. The pilot can locate the jet stream by watch carefully the readings from a vortex thermometer which tells him when he encounters a sud change in temperature at a given level, thus allowing him to change course slightly so as stay in the jet. By so doing, tail winds up to 150 kn are frequently employed to save 5 (average) flying time from Tokyo to Honolulu in 220 flights, or a saving of half a million dolla not to mention time saved. Details of analysis and flight planning as well as of navigati are touched on in this article. *Subject Headings:* **1. Jet stream navigation 2. Air navigati 3. Tokyo-Honolulu air route.**—*M.R.*

7.5–127 551.513.2:551.5

Wolff, Paul M., **Quantitative determination of long waves and their time variatio** *Journal of Meteorology*, 12(6):536–541, Dec. **1955.** 10 figs., 11 refs. **DWB**—Averaging da hemispherical 500 mb contours over 20° diamonds was found to be the best way to separ long and short waves. Specimen space-mean charts and isopleths of 24-hr changes (tot long wave, short wave) are given. A method of quantitative perturbation analysis is scribed. *Subject Heading:* **1. Waves in the westerlies.**—*C.E.P.B.*

ATMOSPHERIC DISTURBANCES

See also: **Vorticity-variation & cyclogenesis** (Raethjen), 7.5–114; **Waves in the westerlies** (Wolff), 7.5–127; **Wind & storms** (Currie), 7.5–172.

7.5–128 551.515.

Gião, Antonio, **Relations entre le creusement et le comblement des perturbations leur déplacement.** [Relations between the deepening and filling of disturbances and th displacement.] *Geofisica Pura e Applicata*, 28:171–189, **1954.** 4 figs., 2 tables, 2 refs, nume ous eqs. **MH-BH**—The deepening and filling (development) of a function $p(\varphi,\lambda,t)$ of t time t and the points (φ,λ) of a regular closed surface σ is first of all defined, in respect to given advection or transfer velocity field $\vec{H}\sigma(\varphi,\lambda)$ tangent to σ, as the variation of p on a fictitious particle moving constantly and everywhere with the velocity $\vec{H}\sigma$. For a give $p(\varphi,\lambda,t)$ and to any $\vec{H}\sigma$ there corresponds a well defined development field $\mathfrak{C}(\varphi,\lambda,t)$ wi certain restrictions. A general formula of the differential geometry and kinematics $p(\varphi,\lambda,t)$ is then derived, giving the velocity of any center and col of a $p(\varphi,\lambda,t)$ as a functi of the advection vector $\vec{H}\sigma$ and the corresponding development field $\mathfrak{C}(\varphi,\lambda,t)$. This formu can be transformed and takes the form of a general relation between the deepening (an filling) of a center (or a col) of a $p(\varphi,\lambda,t)$ and its displacement velocity, the advection vect $\vec{H}\sigma$ appearing no more explicitly. A detailed analysis of the consequences of these formula is then given for the following cases: 1) circular perturbations in the vicinity of a center 2) perturbations having, in the vicinity of a center, an axis of symmetry normal or tangent t the velocity of the center; 3) normal evolution of the tropical cyclones. Finally, the relation between the development $\mathfrak{C}(\varphi,\lambda,t)$ of a field $p(\varphi,\lambda,t)$, the advection velocity vector $\vec{H}\sigma$ an the configuration of the iso-lines in the vicinity of a center are analyzed. Theoretical result give a rational explanation of several well known properties of the behavior of the perturbation in different geographic regions. *Subject Headings:* **1. Cyclone development 2. Cyclon dynamics.**—*From author's summary.*

7.5–129 551.515.3(862):551.50

Alpert, Leo (*Capitol Res. and Dev. Corp., Arlington, Virginia*), **Panama tornadoes** *American Meteorological Society, Bulletin*, 36(4):171–172, April **1955.** 3 figs. **DWB**—Wit the aid of photographs, the author describes two tornadoes observed by him in Panama o June 10, 1943 and in July 1942. The rainfall in both cases was behind the tornado cloud The "collar" phenomena was not observed. *Subject Headings:* **1. Tornado observatio 2. Panama.**—*I.L.D.*

7.5–130 551.515.33(767)

*Asp, M. O. (*U. S. W. B., Little Rock, Arkansas*), **Tornado paths in Arkansas.** U. S. Weather Bureau, Nov. 10, 1954. 2 p. Typescript. Fig. 1: Headrick, W. E., [**Map of**] **Tornado paths in Arkansas, 1829–1952.** **DWB**—Large chart showing tornado paths for 1829–1900, 1901–1940 and 1941–1952, respectively, was prepared by W. E. HEADRICK, cartographer of the Arkansas Highway Department. Data were obtained from plots of Federal Land Surveys from 1815–date (mostly 1830–1859). Recent data (1946–1952) was obtained by direct surveys made by the Arkansas Highway Department. Most data were obtained from timber falls from $<\frac{1}{4}$ mi to 1 mi wide. General direction is SW to NE. Only longer paths are shown on map; in the NW part of state paths are mostly from NW to SE with sharp recurvature (in mid-state) toward NE. *Subject Headings:* **1. Tornado track charts 2. Long period records 3. Arkansas.**—*M.R.*

7.5–131 551.515.4:551.579.4(53)

Thomas, A. C., **Thunderstorm at Sharjah on November 14, 1954.** *Meteorological Magazine*, London, 84(1001):355, Nov. **1955.** 2 photos. **DWB**—A storm of hail and rain on this Arabian airfield gave 2.21″ in 45 min. Photos of flooding are shown. The average annual rainfall is 4.61″. *Subject Headings:* **1. Thunderstorms 2. Floods 3. Sharjah, Arabia.** —*C.E.P.B.*

7.5–132 551.515.41

Douglas, C. K. M., **Night storms and some related diurnal effects.** *Weather*, 10(10):356, Oct. **1955.** **DWB**—Description of synoptic conditions of Cannington storm of Aug. 18, 1924, when over 9″ of rain fell in cold air. Sea was warmer than air and convection extended to high levels. Further inland afternoon weather in such conditions is fine and warm. *Subject Heading:* **1. Thunderstorm dynamics.**—*C.E.P.B.*

7.5–133 551.515.71:551.521.64:523.74

Péczely, György, **Az anticiklonok felépülésének kérdése kapcsolatban a naptevékénség változasáival.** [On the structure of anticyclones in relation to the variations of solar activity.] *Időjárás*, Budapest, 58(6):407–417, Nov./Dec. **1954.** 11 figs., 5 refs. Russian and French summaries p. 407. **DWB**—Also: complete German version: **Über den Zusammenhang zwischen dem Aufbau der Antizyklonen and den Änderungen der Sonnentätigkeit.** *Acta Agronomica*, Budapest, 5(1/2):201–218, **1955.** Russian and English summaries p. 217–218. **DA**—The development of polar, Azorean and Scandinavian anticyclone systems and their connections are investigated. The effect of polar anticyclones on the regeneration of Azorean anticyclones and in turn on the development of Scandinavian anticyclones is discussed in each phase of the process. The results are applied to extended forecasting. A correlation is found between the intensity of polar anticyclones and solar corpuscular radiation. During magnetic disturbances accompanying corpuscular streams the temperature increases over the magnetic pole. This temperature increase propagates from the pole concentrically. At the same time the surface pressure increases and eventually sets off the outbreak of cold air from the Arctic Basin. *Subject Headings:* **1. Polar outbreaks 2. Anticyclone structure 3. Corpuscular radiation 4. Solar activity.**—*Trans. of author's abstract.*

7.5–134 551.515.8:551.509.31

§Emsalem, René, **Pour la mise en évidence de surfaces de discontinuité au niveau des latitudes moyennes.** [Method of analysis of discontinuity surfaces in middle latitudes.] *Revue de Géographie de Lyon*, 30(4):369–378, **1955.** 7 figs., 4 refs. **DWB**—Discontinuity surfaces are defined as boundaries separating lower descending air from upper ascending air (and not necessarily two air masses of different origin). A method is developed whereby such discontinuity surfaces may be identified on upper air charts. The method is applied to the synoptic situation over Western Europe on Feb. 27, 1953, using 700 and 500 mb charts on which vertical temperature gradients serve to illustrate regions of rising or descending air. The discontinuity lines thus obtained are found to correspond to rainfall areas. The average

precipitation level for the synoptic type analyzed is about 3000 m. *Subject Headings:* **1. S optic case histories 2. Discontinuity surfaces.**—*G.T.*

7.5–135 551.515.8:551.589(54

§Jayamaha, G. S., **A synoptic analysis of Ceylon weather.** *Weather*, 11(1):10–15, J **1956.** 5 figs., table, ref. **DWB**—The air masses of Ceylon are listed and mapped, and northern and southern convergence zones limiting the equatorial westerlies. The monso and inter-monsoon seasons, the "burst" of the monsoon and surges in the monsoon are scribed, with 2 synoptic charts. *Subject Headings:* **1. Air masses 2. Synoptic climatol 3. Ceylon.**—*C.E.P.B.*

7.5–136 551.515.8:551.541:551.5

Mosetti, Ferruccio, **A proposito di una questione sulle onde microbariche caratteristi dei fronti.** [On the problem of microbaric waves connected with fronts.] *Annali di Geofis* 7(3):463–468, July **1954.** 2 figs., 15 refs. English summary p. 468. **MH-BH**—Previ authors, using instruments poorly suited for the purpose, found some connection betw *short* period microbaric waves and frontal passages over the station. On the basis of examp here illustrated (Sept. 2B–29, 1951 and March 6–7, 1952), the author shows that microba waves connected with fronts have a *long* period. *Subject Headings:* **1. Microbaric wav 2. Frontal passage effects.**—*M.R.*

7.5–137 551.515.8

Suraud, P., **Le front intertropical en Afrique Occidentale.** [Intertropical front in W Africa.] *Annuaire Hydrologique de la France d'Outre-Mer*, 1952. Paris, pub. **1954.** p. 29 4 figs. **DWB**—The seasonal variations in the position of the intertropical front across Afri are illustrated by full page maps for Jan. and July, showing the wind regimes of the Harmatt or trade wind belt to the N, and of the monsoon belt to the S, and the cyclonic and anticyclo centers of each zone. Vertical structure, time of passage and rainfall regimes are illustrat and described. *Subject Headings:* **1. Intertropical front 2. Tropical meteorology 3. Afric** —*M.R*

7.5–138 551.515.

§Sanders, Frederick, **An investigation of the structure and dynamics of an intense surfa frontal zone.** *Journal of Meteorology*, 12(6):542–552, Dec. **1955.** 18 figs., table, 14 ref 3 eqs. **DWB**—An intense front over the U. S. on April 17–18, 1951, is studied in 3 dimensio Surface and 700 mb charts, isochrones and cross-sections are given. The front became diffu above a few thousand feet. Frontogenetical processes are 10–100 times more intense ne the ground than in the free air. The frontal zone is composed of air initially in the war sector which has been entrained into the zone by intense frontogenesis and is then subjecte to intense frontolysis as it rises within the zone. It appears that the motion of this type frontal zone at the surface is controlled by the motion of the adjacent cold air. *Subject Hea ing:* **1. Frontal development.**—*C.E.P.B. and author's abstract.*

RADIATION AND TEMPERATURE

RADIATION

See also: **Optics and met. of atmos. turbidity** (Volz), 7.5–15; **Radiation bioclimatology** (Davos. Switz. Schweizerisches Forschungsinstitut), 7.5–18; **Effective radiation** (Andreeva, Marshunova), 7.5–84; **Energy balance** (Robinson), 7.5–115; **Corpuscular radiation** (Péczely), 7.5–133.

7.5–139 551.521:551.51

Roach, W. T., **Measurements of atmospheric radiation and the heat balance at th ground at Kew, May, 1953–May, 1954.** *Great Britain. Meteorological Research Committe M.R.P.* 936, Oct. 18, **1955.** 18 p. 10 figs., 2 tables, 11 refs., 11 eqs. Mimeo. **DWB**— The theory of heat balance on a grass surface is discussed and the instrument set up describe

Photographic records of surface temperature, radiation flux and flux of heat at 6 cm in soil were obtained over a complete year; specimen records are shown. Values of net vertical flux of total, short wave and long wave radiation, downward flux of long wave radiation, surface temperature, heat flux into ground, flux of water vapor and rainfall are tabulated for each month. Appendices describe calibration of instruments and a standard black body cavity radiator. *Subject Headings:* **1. Heat balance 2. Radiation balance 3. Kew Observatory, London.**—*C.E.P.B.*

7.5–140 551.521.16

*Steinhauser, F., **Die Veränderlichkeit der Globalbeleuchtungsstärke in Wien.** [The variability of global illumination in Vienna.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 7(1):60–73, **1955.** 2 figs., 2 tables, 4 refs. German, English and French summaries p. 60–61. **DWB**—Observations of global illumination with a selenium photocell adjusted by filters to eye sensitivity, were made at Vienna, 1937–46. Mean values in kilolux are shown by isopleths; 9 h values exceeded 15 h April-Dec., but were less Jan.–March. For hours 5–6, 8–9, 11–12, 15–16, 18-19 means, extremes and mean departures are tabulated for each month and frequencies shown by histograms, the class interval being half the mean deviation for the month. *Subject Headings:* **1. Illumination intensity 2. Vienna, Austria.**—*C.E.P.B.*

7.5–141 551.521.3:551.511

Budyko, M. I., **O preobrazovanii solnechnoĭ energii na poverkhnosti Zemli.** [The transformation of solar energy on the earth's surface.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geograf.*, No. 1:7–14, Jan./Feb. **1954. DLC**—Contents and results of a series of studies carried out at the Leningrad Geophysical Observatory during the last few years concerning geographical regularities of solar energy transformation on the earth's surface and the influence of these transformations on natural processes of the heat balance are presented and discussed. The investigations were influenced by the work of A. A. GRIGOR'EV who used the quantitative balance method which includes the utilization of data on the heat balance. *Subject Headings:* **1. Solar radiation transformation 2. Heat balance. I. Grigor'ev, A. A.**—*A.M.P.*

7.5–142 551.521.32:551.506.7

Houghton, J. T. and Brewer, A. W., **Measurements of the flux of long wave radiation in the upper air 1953–1954.** *Great Britain. Meteorological Research Committee, M.R.P.* 914, April 28, **1955.** 5 p. 4 figs., 7 refs. Mimeo. **DWB**—Upward and downward fluxes of long wave radiation at night were measured by radiometer in an airplane at 3000 ft intervals up to 40,000 ft. Temperature and humidity were also measured. The downward flux below 30,000 ft agreed with ELSASSER's chart with a pressure correction and YAMAMOTO's chart for radiation from CO_2, multiplied by 1.2. The upward radiation was affected by cloud. Dense clouds had 100% emissivity, thin clouds down to 10% and ground 90–95%. A clear atmosphere cooled by 1–2°C/day. Observations in the stratosphere were disappointing. *Subject Headings:* **1. Radiation flux in upper air 2. Airplane soundings.**—*C.E.P.B.*

7.5–143 551.521.61:535.3

Godson, W. L., **The computation of infrared transmission by atmospheric water vapor, Pt. 2.** *Journal of Meteorology*, 12(6):533–535, Dec. **1955.** 2 figs., table, 3 refs., 28 eqs. **DWB**—The calculation of transmission for a model spectrum requires the adoption of a distribution function for line intensity. In the case of the infrared water-vapor spectrum (random model), a logarithmic ogive distribution for line intensity is very realistic and produces smaller transmission and cooling-rate errors than other functions previously proposed. These results apply also when experimental data are assumed available and the requisite parameters are obtained by curve fitting. (For Pt. 1, *see* 6.9-181, Sept. 1955, *MAB.*) *Subject Heading:* **1. Infrared transmission calculations.**—*Author's abstract.*

7.5–144 551.521.61:551.578.11

Johnson, John C. and Terrell, James R. (*both, M.I.T.*), **Transmission cross sections for water spheres illuminated by infrared radiation.** *Optical Society of America, N. Y., Journal,*

45(6):451–454, June **1955.** 2 figs., 3 tables, 6 refs., 5 eqs. **DLC**—The Mie theory is used the computation of several transmission cross sections for absorbing spheres. For each sphere a complex index of refraction is selected such that cross section corresponds to that of a water sphere illuminated by infrared radiation of mean wavelength less than 14 microns. The real part of the index is a value between $1.14 \leq m \leq 1.42$ and the imaginary part, the absorption index, lies between $0 \leq mk \leq 0.40$. Also included is a study of the change in the transmission cross section as the absorption index is varied. For these computations, the real index of refraction is kept constant at $m=1.29$. *Subject Headings:* **1. Mie theory 2. Infrared transmission through raindrops.**—*Authors' abstract.*

7.5–145 551.521.63:551.521.3

Verkholantzeff-Wegener, Antonie, **Der Umkehreffekt von Götz. Messungen des Zenithimmelslichtes mit dem Multiplier.** [The Umkehr effect of Götz: measurements of the zenith sky light with the multiplier.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 7(1):96–116, **1955.** 9 figs., 8 tables, 12 refs. English and French summaries p. 96–97. **DWB**—Measurements of diurnal variation of absorption by ozone of zenith light of different UV wave lengths at Zurich with an electron multiplier, are described with instrumental set up. Ratio 3110/3290 Å is tabulated for zenith distances 75–92.5°; these showed a minimum at 86°33′ with ozone 0.185 cm increasing to 86°56′ with 0.230 cm. The effective wave length in different spectral regions is calculated for zenith distance 40–90°. Measurements are given on 3290, 3110, 3052, 3024 and 2997 Å from 16–18 h and ratios calculated for ozone amounts of 0.211, 0.176 and 0.191 cm, showing the Umkehr effect. *Subject Headings:* **1. Ultraviolet radiation 2. Umkehr effect.**—*C.E.P.B.*

7.5–146 551.521.7:550.38

Jennison, R. C., **Corpuscular streams.** *Observatory,* London, 75(886):125–126, June **1955. DLC**—Suggests that corpuscular eruptions form shock waves travelling at 1500 km/sec, the most probable ionizing agent being the electrons in the front. This agrees with the sudden commencement of magnetic storms. *Subject Headings:* **1. Corpuscular radiation 2. Magnetic storms.**—*C.E.P.B.*

7.5–147 551.521.7 551.594.0

Kawakami, Kinnesuke; Takahashi, Tatsu and Onoue, Michio, **A method of discriminating disturbances in VHF solar noise observation.** *Japan. Radio Research Laboratories, Tokyo Journal,* 2(8):111–124, April **1955.** 16 figs., 2 refs. **DWB**—A method to discriminate various disturbances from the solar noise has been developed by making use of the difference of the waveforms. By means of this method, satisfactory results have been obtained in a solar noise observation at 200 mc, giving a solution to one of the most important problems in the solar noise observation. *Subject Headings:* **1. Radio noise 2. Solar radio noises.**—*Authors' abstract.*

7.5–148 551.521.7:523.75:629.396.8

§Owren, Leif, (*Carnegie Inst., Wash., D. C.*), **Observations of radio emission from the sun at 200 Mc/sec and their relation to solar disk features.** Cornell Univ. School of Electrical Engineering, Contract N6onr-264(06), Radio Astronomy Report, No. 15, May 1, **1954.** 219 p., 32 figs. (incl. photos). 5 p. refs. appended. **DWB**—A voluminous report giving results of solar radio frequency radiation observations at 200 Mc/sec, from April 1950–Dec. 1952, with a radiometer and radio interferometer at McMath-Hulburt and at Cornell Univ. Observatories. Measurement of random noise; actual radiometer observations; and radio interferometer observations in relation to solar features, comprise the first 3 chapters (Pt. I). Pt. II consists of two chapters covering radio emissions associated with solar flares, and enhanced emissions associated with active solar regions. Pt. III covers relationships between radio emissions from sun and solar disk features, and the origin of major bursts and fading in enhanced radiation. The appendix describes the D.T.M. solar radio interferometer. *Subject Headings:* **1. Solar radio frequency radiation 2. Solar disturbances 3. Radio astronomy 4. Radio interferometer observations.**—*M.R.*

TEMPERATURE

See also: **Air temp. variation with height** (Makris), 7.5–13; **Upper air temps.** (Bigg), 7.5–103; **Rainfall spells & temp.** (McIntosh), 7.5–208; **Upper air temperature** (Kamiyama), 7.5–248.

7.5–149 551.524.2(73/9) 551.577.2(73/9)

*U. S. Weather Bureau, **Daily temperature, degree day and precipitation normals, based on, or adjusted to, the 1921–1950 period.** Ashville, N. C., Dec. 1953 (some stations rev. March 1954). loose-leaf, unpaged. entirely tables. Data for 48 states, District of Columbia, Alaska, Hawaii, Pacific Islands and West Indies. Price: $.05 per single stations; $15.00 for assembled set. **DWB**—The temperature and precipitation normals are effective Jan. 1, 1953 and degree days normals, base 65°F, are effective July 1, 1953. The tables give daily values and monthly totals of maximum, minimum and average dry bulb temperature, daily and monthly totals of degree days and daily and monthly totals of precipitation. *Subject Headings:* **1. Temperature normals 2. Precipitation normals 3. Degree days 4. Observational data 5. United States 6. United States possessions.**—*I.L.D.*

7.5–150 551.524.3:551.543:551.509.33(73)

Nagao, Takashi, **Characters of weather group and its application to long-range weather forecasting, Pt. 5.** *Journal of Meteorological Research*, Tokyo, 6(7):254–263, Sept. 1954. 17 figs. In Japanese; English summary p. 254. **Pt. 6.** *Ibid.*, 6(9):433–442, 1954. 21 figs. In Japanese; English summary p. 433. **DWB**—In Pt.5 the author discusses relation between the distribution of interdiurnal variability of air temperature, monthly range of air pressure and monthly mean temperature, using climatological data in each month from Jan. to June in the United States. Results obtained are: 1) charts of monthly range of air pressure were prepared, and the center of the maximum value is in the middle part of the United States; 2) charts of the interdiurnal variability of air temperature were prepared, and the maximum value is in the middle part of the United States; the value of the interdiurnal variability of temperature is large in areas with large value of monthly range of air pressure; 3) the monthly mean temperature charts were compared with charts of distribution of interdiurnal variability of air temperature, and the results show that the gradients of monthly temperature over the United States are large in the case of large value of the interdiurnal variability of temperature. In Pt. 6 the author discusses the relation between the distribution of interdiurnal variability of air temperature, the monthly range of air pressure and the monthly mean temperature, using the climatological data for the months from July to Dec. in the United States. The results obtained are: 1) charts of monthly range of pressure were prepared and the center of maximum value was in the middle part of the United States; 2) charts of diurnal variability of temperature were prepared and the center of maximum value was in the middle part of the United States; the values of diurnal variability of temperature were large in the areas with large values of monthly range of pressure; a correlation diagram was obtained; 3) some characters of charts for each month are discussed. *Subject Headings:* **1. Temperature variations 2. Pressure variations 3. Long-range forecasting 4. United States.**—*Author's abstract.*

7.5–151 551.524.31:551.551

Staley, D. O., **The diurnal temperature wave for quadratic and exponential variation of the austausch coefficient.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1): 25–35, 1956. 2 figs., table, 10 refs., 39 eqs. German and French summaries p. 25–26. **DWB**—The heat conduction equations are solved for the cases $K(=A/\rho$, where ρ is density and A is austausch coefficient$)=K_0=K_1z+K_2z^2$ and $=K_0e^{bz}$, constant with time. Numerical examples show that both amplitude and phase of the diurnal wave are critically dependent on austausch and tend to be smaller the more strongly it increases with height. *Subject Headings:* **1. Austausch coefficient 2. Diurnal temperature variations.**—*C.E.P.B.*

7.5–152 551.524.32

Bayer, Karel (*Czechoslov. Acad. of Science, Clim. Div.*), **Singularity teploty na Milešovce v období 1910–1939.** [Temperature singularities at Milešovka during 1910–1939.] *Meteorologické Zprávy*, Prague, 8(2):35–42, April 30, 1955. 6 figs., 2 tables, 12 refs., 2 eqs. Rus-

sian and German summaries p. 35. **DWB**—In the annual temperature curve for Milešov there is a number of periods in which warming or cooling regularly occurs. These disruptio of the continuity in temperature development clearly indicate the existence of weather s gularities, as appears from a comparison with temperature development on Hohenpeissenbe and precipitation and thunderstorm conditions on Milešovka. A comparison with the fr quency of circulation types does not in every case produce satisfactory results. A mo detailed analysis will be necessary of those cases in which the frequencies of circulation typ did not reflect the occurrence of weather singularities. *Subject Headings:* **1. Temperatu singularities 2. Circulation type frequencies 3. Milešovka, Czechoslovakia.**—*Trans. author's abstract.*

7.5–153 551.524.33:551.590.

*Xanthakis, John, **Study of the mean monthly air temperatures during the successi sunspot cycles.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1):54–7 **1956.** 13 figs., 10 tables, 11 refs., 22 eqs. German and French summaries p. 54–56. **DWB**— From 6 records in central and N.W. Europe (131–169 yrs) the following were analyzed f differences between consecutive 11-year sunspot cycles: a) (May to Aug.)–(Sept. to Feb. b) July–Jan., June–Dec.; c) (Sept.+Oct.–March+April); d) Differences b)–c). A numb of relations with annual sunspot numbers are found. The investigation is then extended E. Europe and the Middle East, and finally to other parts of the world. *Subject Heading* **1. Temperature cycles 2. Sunspot effects on temperature.**—*C.E.P.B.*

7.5–154 551.524.35:551.57

§Yoshioka, T., **Air temperature decrease due to precipitation, Pt. 1.** *Journal of Meteor logical Research*, Tokyo, 6(1/3):52–56, March **1954.** 3 tables, 5 refs. In Japanese; Englis summary p. 52. **Pt. 2.** *Ibid.*, 7(2):112–114, March **1955.** 5 figs., 3 tables, 5 refs. I Japanese. **DWB**—In the first report temperature variation throughout precipitation interv at Aikawa is investigated and results obtained are: 1) Air temperature at the time of rainfa is 0.5–1.3°C smaller than the temperature 1 hour before its beginning both in Jan. and July 2) Air temperature 1 hour after rainfall ending increases by 0.3°C in July and 0.5°C in Ja over that at rainfall time. 3) Air temperature 1 hr after rainfall ending is smaller by 0.3 1.0°C in July and 0.5–1.0°C in Jan. than the temperature 1 hour before rainfall beginning 4) Frequency of air temperature increase at rainfall time in comparison of the temperatur 1 hour before rainfall beginning, is 18% in July and 30% in Jan., respectively. 5) At the tim of snowfall, total temperature decrease of 1.5–2.0°C results. The second report includes synoptic chart for 18 h Jan. 22, 1945 and automatic records for Jan. 22–23, 1945, wind directio and temperature graph and other data in tables and charts. *Subject Headings:* **1. Temperature precipitation relationships 2. Temperature variations 3. Aikawa, Japan.**—*Author's abstract* —*M.R.*

7.5–155 551.524.36:519.241(497.1

*Dobrilović, Borivoje N., **Primer primene zakona normalne raspodele na jedan klima toloski niz.** [Example of an application of the law of normal distribution to a climatological series.] *Yugoslavia. Midrometeorološka Služba, Vesnik*, 3(3/4):90–98, July/Dec. **1954** 3 figs., 3 tables, 3 refs., 7 eqs. **DWB**—The mathematics of Gaussian distribution are ex plained and applied to a classification of 07 h temperature values obtained at Belgrade i Jan. during the period 1936–1954. A table is presented, giving observed and calculate frequencies for seven categories of deviations ranging from extremely subnormal (exceeding −12.6) through normal (±4.2) to extremely above normal (over +12.4). *Subject Headings.* **1. Temperature frequencies 2. Statistical studies 3. Belgrade, Yugoslavia.**—*G.T.*

7.5–156 551.524.37(52)

*Arakawa, Hidetoshi (*Met. Res. Inst., Tokyo*), **Remarkable winters in Japan from the seventh century.** *Geofisica Pura e Applicata*, Milan, 30(1):144–146, Jan./April **1955.** fig. table, 7 refs. **MH-BH**—A chronological list of severe and of mild winters in Japan from 402 A.D. to 1954 is discussed and comparison made with similar data for Europe (Central England and Berlin). Graph shows summer temperature in Tohoku District (North Japan) compared with that in Central England (Manley, 1953, *see items* 4.9–40, Sept. 1953 and

5.3–63, March 1954, *MAB*) from 1883–1953. Both in winter and summer the correspondence between Japan and W. Europe is not close, though some remarkable coincidence of extreme years in both senses (positive and negative correlation) are noted. *Subject Headings:* **1. Severe winters 2. Long period records 3. Northern Japan 4. Central England. I. Manley, Gordon.**—*M.R.*

UPPER AIR TEMPERATURES

7.5–157 551.524.4

Árnason, G. and Vuorela, L. (*both, Stockholm Univ.*), **A two-parameter representation of the normal temperature distribution of the 1,000–500 mb layer.** *Tellus*, Stockholm, 7(2):189–203, May 1955. 10 figs., 13 refs., 5 eqs. **DLC**—Height normals for 1000, 700 and 500 mb, published by U. S. Weather Bureau, have been used to study the normal temperature fields of the 1000–500 mb layer by means of a simple model. In this model the normal temperature-height curve is replaced by one having a temperature lapse-rate independent of height in such a way that the thicknesses of the sub-layers 1000–700 and 700–500 mb are correctly represented by the model. As a consequence, the temperature as well as its horizontal gradient and the thermal wind all have a linear variation with height and may be described in terms of two parameters, the temperature lapse-rate k and a "representative" 1000 mb temperature τ_0. Hemispheric maps for these parameters as well as the thermal wind at 1000 and 500 mb have been prepared for the months Jan. and July. The major frontal zones of the atmosphere appear clearly on the τ_0-maps in position which agree essentially with those shown earlier by a number of meteorologists. The July map reveals, however, a strong baroclinic zone in high latitudes, surrounding the polar cap, not shown clearly in earlier presentations of the low-level baroclinity. The k-charts disclose large horizontal variation in the temperature lapse-rate, and the charts for the thermal wind show that its variation with height is very pronounced in middle and high latitudes. *Subject Headings:* **1. Vertical temperature gradient 2. Numerical forecasting 3. Northern Hemisphere normal temperature charts.**—*Authors' abstract.*

7.5–158 551.524.7:551.509.31

Iwata, I., **Application of upper air temperature.** *Journal of Meteorological Research*, Tokyo, 5(10/12):790–793, Jan. 1954. 3 figs. In Japanese; English summary p. 790. **MH-BH**—The isopleth of daily temperature departure from preceding 5-day mean was drawn at each standard pressure level for radio-sonde observations at Wakkanai, and some important relation was found between the temperature departure and weather. As is seen in Figs. 1, 2 and 3, variation of its sign corresponds very well with that of weather, and could be used for practical forecasting with good result. It is also pointed out that the isopleth graph shows appreciable negative correlation between the sign at troposphere and that at stratosphere. *Subject Headings:* **1. Forecasting techniques 2. Upper air temperature variations.**—*Author's abstract.*

7.5–159 523.746:551.524.7:551.510.535:550.385

*Morton, William C., III, **An investigation of periodicity in selected indices of solar activity.** Weather Services, Inc., Boston, Contract AF 19(604)-449, Scientific Report, No. 5, Aug. 1954. 7 p. 4 figs., 4 tables, 35 refs., eqs. **MH-BH**—An investigation was made to determine whether or not a periodicity in 700 mb temperatures was accompanied by a similar periodicity in solar activity as measured by the Zurich Sunspot Number, the critical frequency of the F2 layer, and the planetary geomagnetic disturbance index (K_p). Harmonic analysis was carried out by FUHRICH's auto-correlation method. *Subject Headings:* **1. Sunspot cycles 2. Upper air temperature periodicities 3. F2 critical frequency anomalies 4. Geomagnetic disturbances.**—*Author's abstract.*

7.5–160 551.524.7:551.571.7

*Müller, Hans Gerhard, **Die Zustandswerte in der freien Atmosphäre bei Schauerniederschlägen.** [The conditions in the free air during showers.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 8(3):237–245, 1955. 4 figs., 2 tables, 6 refs. English and French summaries p. 237. **DWB**—Results of 1664 radiosonde ascents at Munich 1949–53 on rainless days and days with showers, thunderstorms and hail are analyzed. On days with thunderstorms the moist adiabatic and the 0°C level are higher than on rainless days; days with rain within 6 hrs are intermediate. Thunderstorms are rare on days of low relative

humidity but a few occur at high temperatures. The number of days with hail shows litt relation to mean temperature at 850 and 500 mb (minimum at −5 to −1°C) but the area Bavaria affected grows rapidly with increasing temperature. The critical relative humidit for showers within 6 hrs is 185–5 (T_{850}–T_{500}). *Subject Headings:* **1. Thunderstorm forecastin 2. Hailstorm conditions 3. Shower conditions 4. Munich, Germany.**—*C.E.P.B.*

SOIL TEMPERATURE

7.5–161 551.525.4:551.2

Penta, F. and Conforto, B., **Sulle misure di temperatura del sottosuolo nei fori trivella in presenza di acqua e sui relativi rilievi freatimetrici in regioni idrotermali.** [Measuremen of the temperature of the subsoil in hot springs in the presence of water and the relative gradie in the topography of the hydrothermal region.] *Annali di Geofisica*, 4(1):43–93, Jan. 195 29 figs., 2 tables. **MH-BH**—Results of numerous measurements of temperature of hot spring and geysers at various depths are given in tables and diagrams and are analyzed. Measur ments were made in fumaroles and springs in the island of Ischia and at Campi Flegri (Naples Methods of measurement and necessary corrections are discussed. *Subject Headings:* **1. Eart temperatures 2. Geysers 3. Italy.**—*M.R.*

7.5–162 551.525.5:551.578.4

Nagasawa, Shingo and Makino, Kinken, **Ground temperature (soil temperature) unde snow cover.** *Seppyō* (*Snow and Ice*), Tokyo, 11(5):161–167, 1950. 7 figs., tables, foot-refs eqs. In Japanese; English summary p. 11. **DWB**—To find the mechanism of avalanche the ground temperatures were measured by a self-registering electric resistance thermomete on a slope near Itaya station along Ou-line from Jan. to March in 1948. Under snow th temperature of the ground surface remained 0°C all through this interval and that below th surface decreased steadily. Theoretical explanations are given and the thermal effect of rod to which the thermo-elements of the thermometer are fastened is discussed theoretically *Subject Headings:* **1. Soil temperature under snow 2. Resistance thermometers 3. Japan.**— *Authors' abstract.*

7.5–163 551.525.5:00

Ray, Louis L., **Permafrost.** *Arctic*, 4(3):196–203, Dec. 1951. 16 refs. **DLC**—Basic knowledge on the subject is summed up. Definitions are given, nomenclature discussed various forms of permafrost classified and results of research mentioned in general terms *Subject Headings:* **1. Permafrost 2. Definitions.**—*G.T.*

7.5–164 551.525.5:631.4

Soil Mechanics Conference, Dec. 1950, Montreal, **Proceedings.** *National Research Council of Canada. Associate Committee on Soil and Snow Mechanics, Technical Memorandum* No. 19, April 1951. 58 p. Mimeo. **DWB**—Report on Conference held Dec. 14 and 15 1950 in Montreal. Besides papers on regional problems (in various provinces of Canada) papers on soil mechanics as related to the Winnipeg flood, to frost heaving and to soil moisture are of incidental interest to applied meteorology. *Subject Headings:* **1. Soil mechanics 2. Frost heaving 3. Canada.**—*M.R.*

WATER TEMPERATURE

See also: **Irrigation** (Mihara), 7.5–52.

7.5–165 551.526.6(261.3) 551.48:639.222.2

†*Ehnholm, Gunnar, **Studier över strémmingen i Östra Kvarken.** [Studies on the small Baltic herring in East Kvarken.] *Finland. Merentutkimuslaitos, Julkaisu*, No. 149, 1951. 94 +21 p. 21 figs., 68 tables, bibliog. p. 92–94. German summary p. 86–90. **DWB, DLC**— This study on the biology of the small herring *Clupea Larengus v. membrus L.* contains a description of the hydrography of the Gulf of Bothnia including its shape, depth conditions and salt content. Water temperature and water contents of the Gulf of Bothnia as a whole and the temperature, salt content and density of the water' within the Kvarken and adjoining areas during 1938–39. Also the distribution of the zooplankton within the Kvarken at various levels is described. Maps showing the area studied, current in the Gulf of Bothnia, and

able with temperature distribution with depth at Hernösond are presented. *Subject Headings:* 1. Sea temperature data 2. Hydrography 3. Gulf of Bothnia.—*I.L.D.*

7.5–166 551.526.6:551.464

*Granqvist, Gunnar. Regular observations of temperature and salinity in the seas around Finland, July 1946–June 1950. *Finland. Merenmittimuslaitos, Julkaisu*, No. 150, 1951. 35 p. almost entirely tables. DLC—The contents of this paper include the following: monthly averages of surface temperatures and salinities at 14 h, at the year stations; annual averages of the surface temperatures and salinities at the year station; monthly averages of surface and salinities at the light vessels at 7 h, 14 h and 21 h; daily temperatures at different depths at 9 h, at the light vessels in summer 1949; temperatures and salinities at different depths, three times monthly, at the year stations; and temperatures and salinities in different depths, three times monthly, at the light vessels, at 14 h. The localities where the measurements were made are listed. *Subject Headings:* 1. Sea water salinity data 2. Sea temperature data 3. Finland.—*I.L.D.*

7.5–167 551.526.6:551.464(265)

Nagai, Masawo. On the annual variation of sea water temperature and chlorinity at Gotonada. *Oceanography and Meteorology*, Nagasaki, 6(2,4):129–136, (p. 951–958 at top), Dec. 1954. 4 figs., 3 tables, 6 refs. In Japanese; English summary p. 146. MH-BH—The annual variations of the sea-surface temperature and chlorinity at Gotonada, the sea area west of Kyushu, show a negative correlation and are considered to be divided into 2 parts: the variations due to the meteorological processes, such as the heat exchange between sea and atmosphere, evaporation and precipitation, and the variations due to advection. When the meteorological processes are taken into account and the advective factor is estimated, the negative correlation becomes positive: the correlation between the heat transported by the advection and the observed minus calculated chlorinity difference, is positive. *Subject Headings:* 1. Annual sea water temperature variations 2. Chlorinity 3. Heat exchange sea-atmosphere 4. Gotonada, Japan.—*Author's abstract.*

7.5–168 551.526.8:551.48:551.588.4

*Eckel, O., Beitrag zum Studium des Wärmeumsatzes in Seen. [Contribution to the study of the heat balance in lakes.] *Archiv fur Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1):120–157, 1956. 5 figs., 14 tables, 9 refs., eqs. English and French summaries p. 120–121. DWB—Records of temperature, vapor pressure and wind were made on the surface of Lake Traunsee and 8 m above the shore, in 1953–54, and the diurnal and annual variations of evaporation V and heat exchange L computed. "In 62% of all hours the heat flux as well as water vapor current were directed from the water surface upwards, in 31% humidity was transferred to the air and at the same time heat to the water, and only in 7% both currents were directed to the water." In the second part, putting ΔT = temperature difference water-air, and Δe = vapor pressure difference, curves of Δe, $\frac{1}{2}\Delta T$ and sum of both are shown for clear, overcast or misty, and stormy weather and the annual variation of the daily means shown. The water receives heat from the air in March through July, and gives heat to the air in Aug.–Feb., especially in winter. The data are set out in numerous tables. *Subject Headings:* 1. Lake influences 2. Heat balance of lakes 3. Lake Traunsee, Austria.—*C.E.P.B.*

PRESSURE AND WIND

PRESSURE

See also: **Monthly mean pressure charts** (S. Africa), Weather Bur., 7.5–120; **Microbaric waves** (Mossetti), 7.5–136; **Pressure variations** (Nagai), 7.5–150; **Geostrophic wind field** (Obukhov), 7.5–179; **Wind speed maxima** (Clodman), 7.5–181; **Upper air pressure** (Clodman), 7.5–192; **Atmospheric influences** (Neuwirth), 7.5–234.

7.5–169 551.542:551.513(99)

Mironovitch, V., Champ isobarique moyen d'hiver et d'été dans l'Hémisphère Sud. [Mean winter and summer isobaric field in the Southern Hemisphere.] *La Météorologie*,

Paris, 4th Ser., No. 31:187–192, July/Sept. **1953.** 3 figs., 18 refs. French and English summaries p. 187. **MH-BH**—Two original mean seasonal isobaric charts of the Southern Hemisphere, based on all data available up to 1952, are presented and discussed. The main feature emphasized is the complex rather than (as heretofore presumed) simple circulation system over and adjacent to the Antarctic continent—an area shown on a chart of Europe to be equal in magnitude to Europe without the Italian Peninsula. The center of the continent is anticyclonic both seasons (Dec.–Feb. and June–Aug.), but there are lobes separating 3 or 4 cyclones, each in the lee of one of the major Antarctic promontories. These cyclones are semipermanent like the Aleutian and Iceland lows. The circulation in the belt from 40° to 60°S is still considered regular on the mean charts. *Subject Headings:* **1. Antarctic circulation charts 2. Mean seasonal pressure charts for Southern Hemisphere 3. Antarctic.**—*M.R.*

7.5–170 551.543.

Loewe, F. and Scorer, R. S., **Barograph antics.** *Weather*, 10(11):395, Nov. **1955. DWB**—Both correspondents discuss the comparison between pressure waves and those produced by the Siberian meteorite. SCORER calculates that the total energy of the latter equalled 10,000 atomic bombs. *Subject Heading:* **1. Pressure oscillations.**—*C.E.P.B.*

7.5–171 551.543.3:523.1

Pava, R. (Bucharest), **Adalékok a légköri árapály kutatásához.** [Contribution to the study of atmospheric tides.] *Időjárás*, Budapest, 58(6):445–446, Nov./Dec. **1954.** Russian and French summaries p. 445. Transl. by L. Aujeszky. **DWB**—Also: complete German version: **Beiträge zur Forschung der atmosphärischen Gezeiten.** *Acta Agronomica*, Budapest, 5(1/2):261–264, **1955.** Russian and English summaries p. 263–264. **DA**—On the basis of U. S. Weather Bureau Historic Weather Maps, the author examined the possible influence of long lunar periods (i.e., the synodical and draconical lunar months) on atmospheric pressure oscillations. This paper contains a brief report of his findings (a detailed report containing the entire data material is under publication in the transactions of the Romanian Academy of Science). For the equatorial region only a very weak effect of long lunar periods on atmospheric pressure can be detected, but this effect increases with latitude and at the poles it reaches an average amplitude of 8 mb for a synodical and 6.5 mb for a draconical lunar month. The largest amplitude found was 27 mb. For 52°N lat. the average amplitude for the synodical period is 2.6 mb, or 90 times the value identified by CHAPMAN for the daily lunar tide. The oscillations follow the gravity changes with a lag of 2–3 days. They are stronger in winter than in summer. *Subject Heading:* **1. Lunar monthly tides. I. Aujeszky, László** (*Trans.*) —*G.T.*

WIND

7.5–172 551.55:551.515(712)

*Currie, B. W., **Wind and storms.** *Saskatchewan. Univ. Physics Dept. Prairie Provinces and Northwest Territories: Climatic Studies*, Pt. 6, **1955?** 28 p. 9 figs., 7 tables. **DWB**—Normal wind speeds, maximum winds, excessive winds, prevailing directions and direction of strong winds, thunderstorms, hail and dust storms, tornados, wind erosion, chinooks, based on data for representative stations in Alberta, Saskatchewan, Manitoba, Yukon Territory and N.W. Territory of Canada. Extensive discussion of each type of storm and selected and well arranged analytical data presented in tables, wind roses and graphs. *Subject Headings:* **1. Wind conditions in Canadian Arctic 2. Storms in Canadian prairies 3. Prairie Provinces, Canada 4. Canadian Arctic.**—*M.R.*

TURBULENCE

See also: **Turbulence spectrum** (Estoque), 7.5–112; **Austausch coefficient** (Staley), 7.5–151.

7.5–173 551.551:629.13

Radok, U. (*Met. Dept., Melbourne Univ.*), **Nocturnal low-level turbulence near Cambridge Aerodrome.** *Australian Meteorological Magazine*, Melbourne, No. 6:5–17, May **1954.** 4 figs., table. **DWB**—Aircraft taking off at Cambridge Airport, Tasmania have several times

had trouble or crashed because of horizontal changes in wind speed, rather than vertical gusts or motions. Evidence from many sources is cited to support this theory. Both of the incidents which are described, and a previous one, occurred during calms or lulls when winds above the surface were contrary to those expected. Such wind gradients are due to topographic and radiation conditions peculiar to the area. Topography is shown on chart and records of wind and upper air temperature reproduced. *Subject Headings:* **1. Low level turbulence 2. Turbulence in the frictional layer 3. Wind shift line 4. Aeronautical meteorology 5. Tasmania.** —*M.R.*

7.5–174 551.551:551.558.21

Scorer, Robert S., **Turbulence generated in standing waves.** *Royal Meteorological Society, Quarterly Journal*, 81(350):619, Oct. 1955. 4 eqs. **DWB**—Correction to an argument in his paper (*R.M.S. Q. J.*, 80:629, 1954; *see* 6.3–160, March 1955, *MAB*). *Subject Heading:* **1. Turbulence.**

7.5–175 551.551:533.6

Shenton, L. R., **A semi-infinite random walk with discrete steps.** *Cambridge Philosophical Society, London, Proceedings*, 51(3):442–448, July 1955. 5 refs., 27 eqs. **DLC**—Deals with the probability of a given position at any step of a particle executing a random walk over all possible positions $x=0, 1, 2 \ldots$ with initial position $x \geqslant 0$ and a given probability of absorption at $x=0$. A random walk with drift in the presence of a reflecting barrier is also considered. *Subject Headings:* **1. Random walk 2. Turbulence theory.**—*C.E.P.B.*

7.5–176 551.551:523.72

Uberoi, Mahinder S. (*Mich. Univ., Dept. of Aeron. Engr.*), **Investigation of turbulence in the solar atmosphere.** *Astrophysical Journal*, Chicago, 121(2):400–403, March 1955. 4 figs., 5 refs., eqs. **DLC**—The correlation and the spectrum of solar granules are measured by a simple technique, and the results are compared with data obtained by orthodox methods. Published data are analyzed to give a direct evidence of convective heat transfer in the solar atmosphere. *Subject Headings:* **1. Solar atmospheric turbulence 2. Convective heat transfer.** —*Author's abstract.*

7.5–177 551.551:533.17

Van Isacker, J., **La notion d'échelle en mécanique des fluides turbulents.** [Idea of scale in mechanics of turbulent fluids.] *Ciel et Terre*, 70(11/12):425–431, Nov./Dec. 1954. fig., 13 eqs. **DLC**—The author discusses various aspects of the "scale of turbulence," starting with the formulation of the concept to permit a statistical treatment of the motions involved, and going on to develop the theory as an extension of the conclusions of Laufer. *Subject Headings:* **1. Scale of Turbulence 2. Turbulent flow 3. Reynolds Number.**—*M.R.*

WIND DISTRIBUTION AND VARIATION

See also: **Wind profile measurem.** (Thornthwaite), 7.5–88; **Monsoon forecasting** (Ramdas et al), 7.5–98; **Pressure forecasting** (Bontrand), 7.5–101; **Friction layer** (Arkhangel'skiĭ), 7.5–107; **Structure of atmos. surface layer** (Businger), 7.5–109; **Air flow models** (Sawyer), 7.5–116.

7.5–178 551.558.2:551.552:551.43

Corby, G. A. and Wallington, C. E., **Airflow over mountains: the lee wave amplitude.** *Great Britain. Meteorological Research Committee, M.R.P.* 939, Sept. 19, 1955. 7 p. 5 figs., 4 refs., 19 eqs. Mimeo. **DWB**—Theoretical considerations (sufficient decrease of l^2 with height) suggest that lee waves should be common over the British Isles, but they are rarely reported by aircraft. This is because, to produce waves of large amplitude, large mountains need strong winds with an increase of speed and/or decrease of stability with height, and the airstream characteristics must be favorable. The maximum amplitude and vertical velocity of lee waves in given conditions, and the variations of lee wave amplitude and length, are calculated; they are very susceptible to small changes of conditions. *Subject Headings:* **1. Air flow over mountains 2. Lee waves.**—*C.E.P.B.*

7.5–179 551.552:551.54

Obukhov, A. M., **A nagykiterjedésű légköri mozgások dinamikájának néhány kérdé** [A few problems in the dynamics of large-scale atmospheric motion.] *Időjárás*, Budape 59(1):1–6, Jan./Feb. **1955.** 6 refs., 17 eqs. Russian and French summaries p. 1. Transl. Mrs. L. Faragó. **DLC.** Also: complete German version: **Einige Fragen der Dynamik v ausgedehnten atmosphärischen Bewegungen.** *Acta Agronomica*, Budapest, 5(1/2):155–1 **1955.** Russian and English summaries p. 162. **DA**—Two closely connected problems theoretical meteorology are being dealt with in this paper: 1) why is the wind under natu conditions approximating the geostrophic wind? and 2) what processes are being exclud from the sphere of observation by applying equation systems simplified on the basis of qua geostrophic approximation? By an analysis of the equation system of the two-dimensio barotropic model it is shown that atmospheric pressure and wind-field anomaly can coex but for a short period of time. By the quasi-geostrophic approximation applied to the stu of natural atmospheric processes, only the fast-moving waves are excluded from the sphe of observation, the baric field adapting itself to the velocity field. In this paper the procedu is illustrated by an example. *Subject Headings:* **1. Geostrophic wind field. I. Faragó, László** (*Trans.*).—*Author's abstract.*

7.5–180 551.552:551.588.3:551.465(26

van Dijk, W., **An investigation of the vergence field of the wind and ocean currents the Indian Ocean.** *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1):158 177, **1956.** 10 figs., 3 tables, 14 refs. German and French summaries p. 158–159. **DWB**— Charts of sea temperature and "vergence" (convergence or divergence) of wind over th Indian Ocean to 50°S in Jan. are studied. A significant relation is found with convergenc over the relatively warm and divergence over the relatively cold areas, especially in lowe latitudes (correlation 0.56 in 25–2°N, 0.2 in 32–48°S). The vergence of the surface current is also analyzed and DEFANT's circulation scheme confirmed. *Subject Headings:* **1. Con vergence and divergence 2. Sea temperature 3. Ocean currents 4. Indian Ocean.**— *C.E.P.B.*

7.5–181 551.553:551.54

Clodman, J., (*Canadian Met. Service, Toronto*), **The interrelationship between wind-spee maxima, fronts and certain contour heights on isobaric surfaces.** *American Meteorologica Society, Bulletin*, 35(10):464–467, Dec. **1954.** 5 figs., 2 tables, 9 refs. **DWB**—Taking th three-frontal model developed for the North American area by the Canadian Meteorologica Service, the normal properties of the three main frontal surfaces and their associated air-mas temperatures the author shows that the axes of wind maxima at 700 mb and 500 mb ar associated with preferred contour heights. Good agreement between these results (namely that the main wind maximum at 500 mb is at 18,200 ft and at 700 mb, 8900 ft) and those o FLETCHER support the correctness of this analysis. *Subject Headings:* **1. Wind speed maximum 2. Isobaric surfaces 3. Air masses.**—*I.L.D.*

SPECIAL WINDS

7.5–182 551.555.3

Frey, K. (*Olten, Switzerland*), **Der Übergang einer antizyklonalen in eine zykonale Föhnlage und weitere Beiträge zur Kenntnis der räumlichen Temperatur-, Druck- und Windverteilung bei Süd- und bei Nordföhn.** [Transition of an anticyclonic to a cyclonic föhn situation and further contributions to a knowledge of spatial temperature, pressure and wind distribution during south and north föhn.] *Berlin. Freie Universität, Institut für Meteorologie und Geophysik, Meteorologische Abhandlungen*, 2(3):173–188, **1954.** 5 figs., 3 tables, 11 refs. **DWB**—The transition from an anticyclonic to a cyclonic föhn stage is illustrated by means of a specific example. It is shown that the development of a marked solenoidal field on the lee side is of decisive importance for the descent of föhn into valleys. Further indications on the characteristics of spatial fields during south and north föhn situations are analyzed on the basis of an analysis of the mean values of temperature and geopotential differences obtained from radiosonde ascents at Brent, Friedrichshafen and Milan.

GOSSMAN and SCHWEITZER's views on the development of föhn are discussed. *Subject Headings:* **1. Föhn development 2. Föhn weather.**—*Based on author's abstract.*

7.5–183 551.555.3

*Orlicz, Michał, **A stosunkach anemometrycznych na szczytach tatrza skich.** [Wind conditions on the peaks of Tatra Mountains.] *Poland. Państwowy Instytut Hydrologiczno-Meteorologiczny, Wiadosmości Slusby Hydrologicznej i Meteorologicznej*, 3(4):316–337, **1954.** figs., 28 tables, 37 refs. Russian and French summaries p. 336–337. **DLC**—The characteristics of the winds are described on the basis of data of two stations: "Kasprowy Wierch" in the Western Tatras in Poland (2002 m altitude) and "Lomnica" in the High Tatras, Czechoslovakia (2044 m altitude). Period of observations at both stations, 1939–1944. The dispositions of wind directions at Kasprowy Wierch with prevailing south and north winds indicate the presence of local orographic influences. Kasprowy Wierch is situated on the main flange of the Tatra on the sector where the largest depression occurs. The winds follow it. Southerly winds are mainly katabatic winds of the föhn type (called "halny" or "liptowski"), which are local. Northerly winds are also local in the warm season. In the process of diurnal change, the wind direction follows the position of the sun. At Kasprowy Wierch a meridional disposition of wind directions and greater speed due to the orographic dip are observed. At Lomnica there is a predominance of NW winds and the speeds are lower. Although second in altitude in the Tatras, Lomnica represents better weather conditions in the free atmosphere. Föhn winds of the Tatras are compared with föhns of the Alps. *Subject Headings:* **1. Local winds 2. Föhn winds 3. Tatra Mountains 4. Poland 5. Czechoslovakia.**—*A.M.P.*

WIND EFFECTS

7.5–184 551.556:532.594

Bryson, Reid A. and Kuhn, Peter M., **On the measurement of bottom stress in lakes.** *American Geophysical Union, Transactions*, 36(4):612–614, Aug. **1955.** fig., 2 tables, 7 refs., 4 eqs. **DWB**—The rate of decrease of amplitude of the persistent small-scale wind-induced seiche in a lake is primarily a function of bottom stress. This idea is developed and a number of measurements presented. *Subject Headings:* **1. Seiches 2. Wind effects on lakes.**—*Authors' abstract.*

7.5–185 551.556:551.465(261)

Bumpus, Dean F., **The circulation over the continental shelf south of Cape Hatteras.** *American Geophysical Union, Transactions*, 36(4):601–611, Aug. **1955.** 18 figs., 2 tables, numerous refs. **DWB**—South of Cape Hatteras, a southerly-flowing coastal current, such as is common to the northward, is a transient affair. Such a current, when present, is restricted to a very narrow portion of the continental shelf. The dynamic pressure gradient resulting from the combined effect of the runoff and the cross-shelf thermal gradient together with the prevailing wind and the frictional drag of the Florida current provides for a northeasterly drift over a broad part of the Carolina continental shelf. *Subject Headings:* **1. Ocean currents 2. Wind driven currents 3. Western North Atlantic.**—*Author's abstract.*

7.5–186 551.556:631.4:551.311

Can prevent dustbowls. *Science News Letter*, Wash., D. C., 67(13):204, March 26, **1955. DLC**—The Great Plains (about 200,000 sq mi) in Colorado, Kansas, New Mexico, Oklahoma and Texas are highly susceptible to wind erosion in years with below normal rainfall. The high crop yield in wet seasons was responsible for the plowing of about 40,000 acres of sodland, of which 75% was normally unfit for cultivation. Soil conservation experts believe that technical assistance, education and research can successfully counteract and prevent dustbowls. *Subject Headings:* **1. Soil conservation 2. Wind erosion 3. Great Plains.**—*W.N.*

7.5–187 551.556:532.593

Charnock, H., **Statistics and aerodynamics of the sea surface.** *Nature*, London, 177(4498):62–63, Jan. 14, **1956.** 8 refs., eq. **DWB**—Review of meetings of Royal Meteorological Society and Challenger Society on June 15 and Royal Met. Soc. on July 22–23, **1955.**

Papers dealt with wave-spectra statistics (agreement of observation and theory) and the mechanism by which momentum is transferred from the wind to the sea surface. Most of the papers have appeared in the Society's *Quarterly Journal* and been abstracted, but this digest is useful. A generalized expression for the wind profile over a water surface is derived. M. S. LONGUET-HIGGINS described a set-up at the National Institute of Oceanography for finding the form-drag of larger waves by precise recordings of the pressure at the sea surface. *Subject Heading:* **1. Wind-wave relationships.**—*C.E.P.B.*

7.5–188 551.556:551.579

Kluźniak, Sylwia, **Hydrologiczne i meteorologiczne warunki wystpęowania wysokich stanōw wody na zalewi Wiślanym.** [Hydrological and meteorological conditions of occurrence of high water in the Vistula Bay.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, 6(3/4), 95–106, **1953.** 5 figs., 6 refs. English summary p. 106. **DWB**—The causes and extent of water level variations in the Vistula Bay are analyzed and discussed on the basis of observation data for a 50-yr period (1901–1952). It is shown that these variations in the bay which are much (70%) greater than in the Baltic Sea because of the small size and depth of the bay occur mostly in autumn and winter and are caused by the dynamic action of strong N, NNE and NE winds, especially when they blow in the direction of the bay's longitudinal axis. A detailed study of 70 weather situations during the occurrence of high water shows the existence of 5 types of meteorological situations conducive to these winds. These 5 types of weather situations—especially the first—are carefully analyzed and shown on maps. *Subject Headings:* **1. Wind effects on water level 2. Long period records 3. Vistula Bay.**—*A.M.P.*

7.5–189 551.556:551.46:622.323(26)

Leipper, Dale F. (*Dept. of Oceanog., Texas A. & M. College*), **Ocean waves and marine oil operations.** *Texas Agricultural and Mechanical College. Dept. of Oceanography, Collected Reprints in Oceanography and Meteorology*, No. 1/30, **1950/1954,** p. 5–7. port., photo. **DWB**—Reprint from *Oil and Gas Journal*, Tulsa, Oklahoma, 49(7), June **1950.**—Mention is made of a symposium on offshore drilling problems in *Oil and Gas Journal*, Feb. 23, **1950,** and conclusions that vertical forces associated with ocean waves are the most damaging, that additional data on ocean waves are needed, that the Sverdrup-Munk wave theory is not applicable to short fetch winds such as hurricanes in shallow waters, and that standard forecasts for general public do not contain enough information for the offshore operator. Maximum heights of waves link between oceanography and engineering, and ocean wave studies at Jolla and Texas A & M are reviewed. *Subject Headings:* **1. Ocean wave research 2. Wind waves 3. Off shore oil industry 4. Gulf of Mexico.**—*M.R.*

7.5–190 551.556.3:621.311.24

Sidorov, V. I., **Vetrodvigateli v Arktike.** [Windpower generators in the Arctic.] Moscow, Izdat. Glavsevmorputi, **1948.** 2nd ed. 182 p. 105 figs., 35 tables, 27 diagrs. (3 fold.) **DLC**—A technical "manual" describing and giving details of construction and operation of wind power generators in the Arctic. Actual examples of their use and difficulties encountered under severe gale or ice conditions, and efficiency at a place like Cape Zhelania are given. *Subject Headings:* **1. Wind generators 2. Cape Zhelania 3. Soviet Arctic.**—*M.R.*

UPPER AIR WINDS

See also: **Upper air wind measurem.** (Robertson et al), 7.5–65; **Radar wind comparisons** (Harrison), 7.5–66; **Stratospheric winds** (Dütsch), 7.5–105; **Jet stream profiles** (Harding), 7.5–121; **Jet stream variations** (Hoyle), 7.5–122; **Jet stream,** 7.5–123; **Jet stream properties** (Serebreny et al.), 7.5–124; **Jet stream structure** (Serebreny), 7.5–125; **Jet stream navigation** (Stiefellmaier), 7.5–126; **Atmos. winds & temps.** (Kennedy et al.), 7.5–261.

7.5–191 551.557:551.510.53

*†Bannon, J. K. and Jones, R. A., **The mean wind at 60 mb.** *Great Britain. Meteorological Research Committee, M.R.P.* 925, Aug. 24, **1955.** 22 p. 4 figs., 3 tables, 36 refs. Mimeo. **DWB**—Vector resultant winds at 60 mb (20 km) were constructed from the few wind ob-

ervations available and from contour charts of 100 mb level extrapolated to 60 mb, for Jan., April, July and Oct. Values of direction and speed are tabulated for 83 stations ranging from 61°N–52°S, plotted on Mercator charts and discussed. *Subject Heading:* **1. Stratospheric winds.**—*C.E.P.B.*

7.5–192 551.557:551.547:019.941

Clodman, J. (*Met. Service, Toronto*), **A misinterpretation in the Bulletin of some data presented by W. C. Godson on winds aloft.** *American Meteorological Society, Bulletin,* 36(3):103, March **1955. DWB**—Comments on Reed, J. W., **Representativeness of winds-aloft observations** (*see* 6.11–100, Nov. 1955, *M.1B*) and on Godson, W. L., **Study of the deviations of wind speeds and directions from geostrophic values** (*see* 3–90, March 1950, *MAB*). **DWB**—Godson (1950) used North American data, not English. Figure of 41 mph for daily change in wind velocity did not refer to local change in wind velocity ($\partial V/\partial t$) but change with a moving parcel V (dV/dt), Godson calculated 15.4±0.5 mi/hr/day compared with Reed's figure of 14 mi/hr/day. *Subject Headings:* **1. Reviews 2. Upper air winds 3. Upper air pressure 4. Geostrophic winds. I. Godson, W. C. II. Reed, J. W.**—*M.R.*

VERTICAL CURRENTS

See: **Upper air wind measurem.** (Morasca), 7.5–80; **Turbulence in standing waves** (Scorer), **7.5–174; Airflow over Mountains** (Corby, Wallington), 7.5–178.

AQUEOUS VAPOR, HYDROMETEORS AND HYDROMETEOROLOGY

HUMIDITY

See also: **Hydromet. data,** 7.5–72; **Shower conditions** (Müller), 7.5–160; **Melting of snow cover** (Manohin), 7.5–214.

7.5–193 551.571:551.511

Budyko, M. I. and Drozdov, O. A., **Zakonomernosti vlagooborota v atmosfere.** [Laws of moisture exchange in the atmosphere.] *Akademiia Nauk SSSR, Izvestiia, Ser. Geogr.,* No. 4:5–14, **1953.** 2 tables, 16 refs., 4 eqs. **DLC**—A series of papers have been published recently by KH. P. Pogosian, K. I. Kashin and others (of the Hydrometeorological Service) opposing Brückner's theory and showing that laws of moisture exchange cannot be studied without taking into consideration the atmospheric circulation. Although subsequent written and oral discussions of their results approved the basic principles of their calculations, some doubts were expressed concerning the methods of calculation of the annual variations of the moisture exchange components; on the method of determining the horizontal water vapor transfer and the calculation of the influence of "active" and "passive" water vapor in the analysis of humidity circulation. In view of the fact that the latter doubt is based on erroneous concepts of the inquirers, the authors summarize the basic principles of the theory as developed by the Central Geophysical Observatory which comply fully with Voeĭkov's concepts of the nature of moisture exchange, on the importance of local evaporation for summer precipitation in European Russia, and on the dominant rule of vapor transfer from the Atlantic on precipitation in Europe and W. Siberia, and prove the correctness of their calculation methods of determining the annual variation and the horizontal transfer of water vapor in the atmosphere. *Subject Headings:* **1. Moisture exchange 2. Water vapor transfer 3. Atmospheric circulation.**—*A.M.P.*

EVAPORATION AND EVAPOTRANSPIRATION

7.5–194 551.573

†*Blaney, Harry F. (*U. S. Soil Conservation Serv., Los Angeles*), **Consumptive use of water.** *American Society of Civil Engineers, Proceedings,* Vol. 77, Separate No. 91, Oct. **1951.** 8 tables, 3 figs., 32 refs. **DWB**—The subject of consumptive use for evapotranspiration is discussed

with special reference to definitions, methods and results of research. Empirical formul are analyzed relating the consumptive use to temperature, daytime hours and humidit Total evapotranspiration data for the growing period or annual periods are given for irrigat crops and natural vegetation on the basis of field experiments, tank measurements and s moisture studies. *Subject Headings:* **1. Evapotranspiration 2. Irrigation 3. United State** —*A.A.*

7.5–195 551.573:551.5

Bolelli, Ed. (*Centre des Études Hydrogéologiques du Maroc*), **Coefficients d'infiltratio Coefficients d'évaporation: étude d'un cas précis dans des calcaires gréseux (pliocène quaternaire de la côte du Maroc).** [Coefficients of infiltration, coefficients of evaporatio Study of a given case on sandy limestone (pliocene and quaternary of the Morocco coast) *I.U.G.G. International Association of Scientific Hydrology, Brussels, 1951,* [*Transactions* 4:12–14, **1952. DWB**—Study, made for the catchment area 40 km² of the oasis Ain Rebou near Rabat, shows that 83.5% of the annual precipitation (549 mm) is lost by evapotran piration. The area has 20% forests (*Queran Suber* L.), 45% pastures and 35% cultivated lan mainly under cereals. *Subject Headings:* **1. Evapotranspiration 2. Hydrologic cycle Morocco.**—*A.A.*

7.5–196 551.57

Budyko, M. I., **Izmerenie estestvennogo isparenii a.** [Measurements of natural evapora tion.] *U.S.S.R. Glavnoe Upravlenie Gidrometeorologicheskoĭ Sluzhby, Trudy Nauchno issledoval'skikh Uchrezhdeniĭ, Ser.* 1, *Meteorologiia,* No. 34:83–92, **1946.** fig., 6 refs. **DLC**— Two principal methods for determining the total evaporation from soil surface are mathe matically analyzed. The first is the so-called gravimetric method (periodical weighing o monoliths (cores) of soil with plants.) The second method, presented by THORNTHWAIT and HOLZMAN, defines the total evaporation by measurement of the specific humidity on tw levels above soil surface and by determination of the coefficient of turbulent exchange. Th author prefers the second method but points out a mistake in the determination of the coeff cient of turbulent exchange which exaggerates the value of evaporation from 200–300% The author presents his own formula for determining the intensity of natural evaporatio through the coefficient of turbulent exchange. *Subject Heading:* **1. Evaporation measurement** —*N. T. Zikeev.*

7.5–197 551.573:551.578.41 551.579.

Kaitera, Pentti [*Finland*], **Snow melting in the spring and its effects on the opening of the waterways in Finland.** *International Association of Scientific Hydrology, Oslo* 1948 [*Transactions*], 2:38, [1949]. **DWB**—Brief report on experiments made in 1934–37 to determine rate of melting of snow and evaporation from surface. It was found that on the average 45–50% melts in 5 days, 70% in 10 days, 85% in 15 days, and 95% in 30 days. At −2.9°C, .41 mm evaporated in one day, at +1.5°C, .29 mm, and at +4.3°C, .07 mm. On warmer days the dew point is often higher than the snow temperature resulting in condensation instead of evaporation. *Subject Headings:* **1. Snow melt 2. Evaporation of snow 3. Finland.** —*M.R.*

7.5–198 551.573

Ståfelt, M. G., **Om metoderna att bestämma avdunstningen i naturen.** [Methods for determining natural transpiration and evaporation.] (*K.*) *Lantbruksakademien, Stockholm, Tidskrift,* 86(4):308–327, **1947.** refs. p. 326–327. English summary p. 327. **DLC**— Some misinterpretations of the author's data by OLOF TRYSELIUS in his paper on **Evaporation in southern Sweden** are discussed. *Subject Headings:* **9. Evaporation 2. Reviews.**—*W.N.*

CONDENSATION

7.5–199 551.574.1:551.594.11

Dreisbach, K., **Die vertikale Verteilung der grossen Kerne in der unteren Troposphäre und ihr Zusammenhang mit dem elektrischen Potentialgefälle.** [The vertical distribution

large nuclei in the lower troposphere and its connection with the electric potential gradient.] *rchiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1):36–53, **1956.** 8 figs., tables, 18 refs. English and French summaries p. 36–37. **DWB**—Measurements of vertical stribution of large nuclei up to 2800 m were made in haze with a Zeiss conimeter in a glider. he values were only relative but comparable among themselves; they gave: diameter $<1\mu$, 4%; 1–2μ, 23%; $>2\mu$, 3%. Observations of potential gradient were made at the same time, nd the curves showed remarkable similarity. The mean number of nuclei decreased from 0,000 at 430 m to 257 at 2600 m, gradient volt/m from 85 at 500 m to 19 at 2500–2800 m. n individual ascents nuclei and potential gradient gave peaks in the haze layers. *Subject Headings:* **1. Nuclei in free air 2. Potential gradient observations.**—*C.E.P.B.*

7.5–200 551.574.1:551.510.42:551.590.25:551.577.3

Smith, E. J.; Kassander, A. R. and Twomey, S., **Measurements of natural freezing nuclei t high altitudes.** *Nature*, London, 177(4498):82–83, Jan. 14, **1956.** fig., 3 refs. **DWB**—o test BOWEN's theory of stimulation of rainfall by meteor dust, measurements of temperature at which one ice crystal per liter formed at 3000 ft were made at Sydney (Australia) n Jan. 1954 and 1955, at Tucson (Ariz.) in Jan. 1955, and on a mountain peak in Hawaii. They showed maximum temperatures of about −20°C on Jan. 12–14, 22–23 and 31, which oughly coincided with peaks in Sydney rainfall. *Subject Headings:* **1. Freezing nuclei 2. Meteoric dust 3. Rainfall singularities.**—*C.E.P.B.*

7.5–201 536.7:551.574.41:551.508.74

†Hofmann, Gustav, **Die Thermodynamik der Taubildung.** [Thermodynamics of dew formation.] *Germany. Deutscher Wetterdienst, Berichte*, 3(18), **1955.** 45 p. 13 figs. (inc. photos), 7 tables, 126 refs., 67 eqs. **DWB**—This comprehensive survey of the dew problem is based upon a critical survey of the literature and upon original experimental and theoretical research. Pt. 1 deals with the characteristics of dew and of related precipitation forms, its frequency and temporal distribution, the maximum night values of dew, its role in water balance, its biological value and methods of dew measurement. In Pt. 2, the thermodynamics of dew formations, dew is considered as a part of the nocturnal energy balance and a dew formula is derived from the equation of energy and mass transfer. It gives the temporal increase in amount of dew as a function of effective outgoing radiation and of the product of saturation deficit and ventilation. The methodology of dew measurement, the maximum of dew formation, the thermodynamics of rime formation, the analogy between dew formation and electrolytic deposition, etc. are considered. Pt. 3 contains a comparison of the theoretical work of the author with studies on the physics of dew formation of M. ROBITZSCH, F. ZUNKER, G. YAMAMOTO, etc. involving the energy measurement of dew by way of heat balance and turbulent exchange with T. HOMÉN's and E. WOLLNY's investigations on the energy of dew formation, etc. The influence of weather elements and of the microclimate on dew formation is analyzed. Pt. 4 contains a description of the construction, theory and use of a thermoelectric dew recorder. *Subject Headings:* **1. Thermodynamics of dew formation 2. Dew measurement techniques 3. Dew formation 4. Dew recorders.**—*I.L.D.*

7.5–202 551.574.42:621.315

Diem, M., **Hochstlasten der Nebelfrostablagerungen an Hochspannungsleitungen im Gebirge.** [Maximum load of rime on high tension conductors in mountains.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B*, 7(1):84–95, **1955.** 3 figs., 3 tables, 31 refs., 8 eqs. English and French summaries p. 84–85. **DWB**—The physics of ice deposition on wires from cloud elements is set out, with curves of deposited mass from droplets of 2μ diameter with different wind velocities. WAIBEL's measurements and others are then analyzed, and shown to fit in with the theoretical computations. The total load in t hours is given by $c.\ e^{at}$, where c is a constant and a varies with location (especially height) between .003 and .03. *Subject Headings:* **1. Icing of transmission lines. I. Waibel, K.**—*C.E.B.P.*

7.5–203 551.574.42:621.315

Waibel, K., **Die meteorologischen Bedingungen für die Nebelfrostablagerungen an Hochspannungsleitungen im Gebirge.** [The meteorological conditions for rime deposits on

[illegible]

[illegible]

[illegible]

7.5–210 551.577.5:581.C

Glock, Waldo S., **Tree-growth and rainfall.** *American Geophysical Union, Transactio* 36(2):315–318, April **1955.** table, 10 refs. **DLC**—Two methods of analysis of tree-rings estimate rainfall are suggested: 1) study of rainfall types in relation to growth patterns a 2) direct correlation of tree growth and rainfall. For the study of growth patterns, 3 types recognized: (1) California or Sierra type (rainy winter and dry summer, autumn and sprin (2) West Texas type (intermittent at any season) and (3) Arizona or varying type—sometim with marked annual cycle and sometimes with fluctuating patterns. Since growth respon quite rapidly to moisture in dry soils, several rings may occur in a year under (2) and (For correlations, data from Santa Fe for March–July and Holman Pass tree ring data have be used for two independent periods 1850–97 and 1898–1941. Latter period showed bett correlation. *Subject Headings:* **1. Tree growth patterns and rainfall types 2. Tree rin rainfall relationships 3. New Mexico.**—*M.R.*

7.5–211 551.577.

Rakhmanov, V. V., **K voprosu o vliianii lesa na osadki.** [On the problem of the fore effect on precipitation.] *Meteorologiia i Gidrologiia*, No. 2:61–64, March/April, **1955.** refs. **DLC**—In connection with the second edition of V. G. NESTEROV's book, **"Obshch lesovodstvo"** [General forestry], the author discusses the chapter dealing with the hydr meteorological role of forests, in particular the section on the effect of forests upon precipitatio He criticizes the statements that forests increase precipitation by facilitating the condensati of moisture. *Subject Headings:* **1. Forest effects on precipitation 2. Forest hydrometeorolog** —*I.L.D.*

RAIN AND SNOW

See also: **Snow conference proceed.** (Western Snow Conf.), 7.5–78; **Snow cover depth** (Abramova), 7.5–61; **Measurem. of precip. effect** (Robinson), 7.5–68; **Snow res. institutes** (de Quervain et al.), 7.5–71; **Infrared transmission through raindrops** (Johnson, Terrell), 7.5–144; **Soil temp. under snow** (Nagasawa, Makino), 7.5–162; **Snow melt and its effects on waterways** (Kaitera), 7.5–197; **Water supply forecasts** (Strauss), 7.5–217; **Hail growth** (Wolf), 7.5–249; **Electrical charges on raindrops** (Goyer, Handeer), 7.5–251.

7.5–212 551.578.4

Hallett, J., **Replica technique for the study of snow crystals.** *Weather*, 11(2):40–4 Feb. **1956.** 4 figs. **DWB**—Describes the technique of making replicas with a solution Formvar in ethylene dichloride with examples and notes on growth. *Subject Headin* **1. Snow crystals.**—*C.E.P.B.*

7.5–213 551.578.42(538

*Kosiba, Aleksander, **Opady śnieżne na Śląsky.** [Snowfall in Silesia.] *Wrocławsk Towarzystwo Naukowe, Prace, Ser. B*, No. 71, **1955.** 40 p. 8 figs. (some fold.), 19 table 9 refs. On t-p: Acta Meteorologica et Climatologica, Universitatis Wratislaviensis. **DWE DLC.** Also his: **Snowfalls in Silesia.** *Acta Geophysica Polonica*, Warsaw, 2(3):136–13 **1954.** eqs. Polish summary p. 138–139. **MH-BH**—A detailed study of snowfall in Silesi based on observational data for 117 stations for the 1935–1940 period, published in variou of the Deutsches Meteorologisches Jahrbuch, Pt. 3, of the Reichsamt für Wetterdienst an later the Deutscher Wetterdienst in der US-Zone. The data were found to be representativ in spite of the brevity of the period. The results dealing with questions of the topographica distribution of annual and monthly frequencies (number of days with) snowfall in relation t altitude, and the causes of anomalies; the dates of first snowfall in autumn and of the last i spring; the potential periods of snowfall in various sections of the area; the variations of th annual and seasonal frequencies of snowfall and its correspondence with the thickness of th snow cover; hoar frost as a component part of snowfall (increasing with height, oceanity an latitude); the part played by snow in the total amount of precipitation and in the balance o ground and river waters—are presented in numerous tables, graphs and charts and discussed The author stresses the difficulty of obtaining a complete picture of the phenomenon in th

hole area in view of the insufficiency or the lack of observation stations in high mountains and at remote points, as well as to the absence of uniform criteria for determining days with snowfall in case of mixed precipitation. *Subject Headings:* **1. Snowfall data 2. Snow cover 3. Snow melt 4. Silesia.**—*A.M.P.*

7.5–214 551.578.46:551.571:551.43(497.1)

Manohin, V., **Topljenje snežnog pokrivača na planinama prema podacima sa Kredarice.** [Melting of the snow cover in mountains according to data for Kredarica Mountain.] *Yugoslavia. Hidrometeorološka Služba, Vesnik*, 3(3/4):105–106, July/Dec. **1954. DWB**—Describes observations from which it appears that snow temperature (and consequently the snow line) is much more affected by dewpoint than by air temperature. *Subject Headings:* **1. Snow line and dew point 2. Kredarica Mt., Yugoslavia.**—*G.T.*

7.5–215 551.578.46

Yosida, Zyungo, **A theoretical study on subsidence force of snow.** *Low Temperature Science, Sapporo, Japan, Ser. A, Physical Sciences*, v. 12:25–35, **1954.** 3 figs., 6 refs., eqs. (In Japanese; English summary p. 35. **DWB**—The author derives a mathematical formula expressing the subsidence force of a snow cover, namely: $F_s = 2\,bpD(t)$, $D(t) = \frac{4}{B}\sqrt{\frac{nZ_0}{2\,pg}}\frac{\sqrt{A+Bt}}{t}$, where F_s = subsidence force, b = thickness of the surface snow layer, p = snow density of this layer, g, Z, and t are, respectively, the acceleration of gravity, the height of the horizontal base (upon which the snow layer is acting) above the ground surface and t, the time that has elapsed since the snow layer began to subside. A and B are two constants, representing the relation between initial thickness of any snow layer and the thickness after subsidence. *Subject Heading:* **1. Snow cover compaction.**—*Based on author's abstract.*

HYDROMETEOROLOGY

See also: **Water economy** (Lütschg-Loetscher et al.), 7.5–12; **Soil moisture studies,** 7.5–30; **Hydrology bibliog.** (I.U.G.G.), 7.5–33; **Runoff evaluation from rainfall** (Novotny), 7.5–63; **Water level variations** (Gur'ev), 7.5–89; **Thunderstorms** (Thomas), 7.5–131; **Wind effects on water level** (Kluzňiak), 7.5–188; **Hydrologic cycle** (Bolelli), 7.5–195; **Snow melt & its effects on waterways** (Kaitera), 7.5–197.

7.5–216 551.579:551.481.1

Sokolov, A. A., **Vliianie ozer na normu stoka rek.** [Influence of lakes on the norm of river flow.] *Meteorologiia i Gidrologiia*, Leningrad, No. 1:36–41, Jan./Feb. **1955.** 2 figs., 2 tables, 3 refs. **DWB**—A water balance scheme for investigating the effect of the influence of lake basins upon the norm of river flow is described. For the European part of the U.S.S.R. it is shown (1) that in a forest zone the river flow diminishes with increasing areal surface occupied by lakes and (2) that in the southern forest zone the lake area of the catchment region sharply influences river flow. *Subject Headings:* **1. Lake influences 2. River flow 3. U.S.S.R.**—*I.L.D.*

7.5–217 551.579.2:551.501:551.578.46:551.509.5

Strauss, Fred A., **Forecasting water supply through snow surveys.** *American Water Works Association, Journal*, 46(9):853–863, Sept. **1954.** 6 figs. **DLC**—Techniques used in water supply forecasting for the season as employed in California by the Cooperative Snow Surveys and other agencies are described and illustrated. The first snow surveys for the purpose of runoff forecasting were made in 1918, using techniques and data initiated by J. E. Church of the Univ. of Nevada in the early part of the century. Surveys are now paid for by the state and U. S. Government and are supervised by the State of California. They cover 3 watersheds from the Shasta River to Cottonwood Creek Basin. Accuracy of forecasts is shown on a scatter diagram. *Subject Headings:* **1. Water supply forecasts 2. Snow surveys 3. Sierra Nevada Range, Calif.**—*M.R.*

7.5–218 551.579:628.1(4

The water problem in Great Britain. *Nature*, London, 176(4494):1133–1134, Dec. **1955. DWB**—Increasing population and increasing use of water per head, especially industry, have raised consumption to 1750 million gallons a day. Rainfall averages 2 million gallons but is unevenly distributed in space and time. Underground supplies falling. A Central Advisory Water Committee has been appointed to consider the ove problem. *Subject Headings:* **1. Water supply survey 2. Great Britain.**—*C.E.P.B.*

7.5–219 551.579.2:551.58

CHigirinskiĭ, P. F., **Elementy limannogo orosheniia na mezhpolosnykh poliakh.** [Il elements of flooding irrigation on fields between forest strips.] *Meteorologiia i Gidrolog* No. 2:32–33, March/April, **1955.** fig., ref. **DLC**—Contemporary concepts on the wa regulating role of forest strips must consider the water regulating role of snow drifts th are formed in forest strips. It is shown that forest strips can be used to form snow d dikes for flood irrigation especially in drought regions. *Subject Headings:* **1. Water supply fr snow 2. Forest snow pack.**—*I.L.D.*

7.5–220 551.579.4:551.4

CHekalovskiĭ, E. F., **Ob odnom nelogichnom trebovanii "Nastavleniia."** [Illogi requirement in the "Instructions."] *Meteorologiia i Gidrologiia*, No. 2:47, March/April, 195 **DWB**—Criticizes the requirement of calculating the velocity of flow in water discharge stud to three significant figures. *Subject Heading:* **1. River discharge calculations.**—*I.L.D.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATOLOGY

See also: **Annual climatological reports** (Davos. Switzerland. Schweizerisches Forschungsinstitut), 7.5–18.

7.5–221 551.58:001

Dammann, W., **Vor einer Neuordnung des Beobachtungs- und Arbeitssystems d praktischen Klimatologie?** [Improvement of the observation and working methods practical climatology?] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser.* 7(1):1–10, **1955.** English and French summaries p. 1. **DWB**—In most countries climatolo cannot be further improved by increasing number of stations, except temporarily for speci problems such as microclimatology. For technical problems daily means and the usu observation hours (7, 14, 21) are insufficient; night observations are often required. Auth suggests a network of first order stations supplemented by mobile units. The possibilit of combining climatological and synoptic networks with the same hours is considered. A observations should be punched on cards and frequencies as well as means computed. In vestigations should be carried out regionally by teams at the main stations, with local know edge. *Subject Heading:* **1. Climatological research.**—*C.E.P.B.*

CLIMATOLOGY OF PARTICULAR PLACES

See also: **Climate of Hungary** (Görög), 7.5–11; **Climate of St. Moritz** (Lütschg-Loetscher et al.), 7.5–12; **Sailing directions** (Gr. Brit. Hydrogr. Dept.), 7.5–45; **Climate of White Sea** (U. S. Hydrogr. Off.), 7.5–46; **Climate of El Salvador** (El Salvador. Centro Nac. de Agronomía), 7.5–74.

7.5–222 551.582.2(529

*†Formosa Bank. Economy Research Laboratory [T'ai wan yin hang ching chi chiu shih] **T'ai wan ch'i hou chih.** [Climate of Formosa.] Taipei, **1954.** 220 p. 101 figs., 135 tables refs. In Chinese. **DLC**—A good climatography of Formosa, which contains the following chapters: 1) geographical environment, 2) climatic provinces and climatic classification 3) monthly climatic characteristics with tables, 4) air temperature, 5) rainfall, 6) wind

humidity, 8) evaporation, 9) thunderstorm, 10) adaptability of principal agricultural products, 11) distribution of forests, 12) mountain climate, 13) climatic cycle of rainfall, temperature and typhoon, 14) annual regime of climatic elements, 15) rainfall and run-off in principal river basins and 16) insects and their distribution. *Subject Headings:* **1. Climate of Formosa 2. Climatic data 3. Formosa.**—*H. Arakawa.*

7.5–223 551.582.2(761)

*U. S. Weather Bureau, **Climatological summary, Auburn, Alabama, 1855–1952.** Montgomery, Alabama, **1953.** 30 p. mostly tables. Price: $.20 from Weather Bureau Office, Montgomery, Ala. **DLC**—A good example of getting the most out of a little available data. Besides normal and comparative data for temperature, precipitation, and the usual elements, the publication contains data and analysis of frost, dew, hail, sleet, snow, tornado, evaporation, drought, wet periods, heating and cooling degree days, earthquakes, daylight, sunshine, twilight, etc. Frequencies of precipitation amounts of .01, .05, .10, .25, .50, 1.00 and 2.00 in. or more, and of maximum and minimum temperatures of 90°, 95°, 100° and 105°F and over 32°, 30°, 25°, 20°, 15°, 10°, 5° and 0° or below, monthly precipitation and temperature means and extremes, etc. for each year from 1855–7 and 1881–1952 are tabulated. A summary of the climate and a description of station and list of observers are also included. *Subject Headings:* **1. Climatic data summaries 2. Climate of Auburn, Alabama 3. Auburn, Alabama.**—*M.R.*

7.5–224 551.582.2(761)

*U. S. Weather Bureau, **Climatological summary, Troy, Alabama, 1872–1953.** Montgomery, Alabama, **1954.** 26 p. numerous tables. **DWB**—Data and discussion of climate, precipitation (averages, extremes, frequency, maximum 24-hour), temperature (average, extreme, range, degree-days, frequency, diurnal fluctuations), sunshine, snow, sleet, dew, frost, humidity, tornadoes, wind and daylight. Monthly values for each year are given for major elements. Names of observers (and period served) are listed. *Subject Headings:* **1. Climate of Troy, Alabama 2. Troy, Alabama.**—*M.R.*

CLIMATIC CHANGES

See also: **Historical climates** (Arakawa), 7.5–77.

7.5–225 551.583.3

Bartha, Lajos, Jr., **Bacsák György kandidátusi értekezésének vitája.** [Debate on G. Bacsák's thesis for Ph.D.] *Időjárás*, Budapest, 58(5):321, Sept./Oct. **1954.** **DWB**—G. Bacsák presented as his thesis: **Astronomical interpretation of the pliocene and pleistocene periods.** In this work shortcomings of the ice age theory of Milankovič were corrected and another 400,000 years were added to the 600,000 years of paleoclimatic records hitherto available. *Subject Headings:* **1. Ice ages 2. Paleoclimates 3. Debates 4. Bacsák, G.**—*G.T.*

7.5–226 551.583.3

Emiliani, Cesare; Flint, Richard Foster and Urey, Harold C., **Past climates of the earth: an NBC radio discussion.** *Chicago. Univ., Round Table*, No. 870, Dec. 12, **1954**, p. 1–10. **DWB**—This round table discussion brings out recent advances in geochronology by C^{14} and oxygen isotope measurements, fossils from deep sea samples or from glacier moraines, and deductions as to past climates and glaciation. Prof. Urey is of the mind that we may be in the middle of an ice age which has fluctuated widely but endured for about a million years. *Subject Headings:* **1. Climatic changes 2. Glacial periods.**—*M.R.*

7.5–227 551.583.3:581.16

Straka, Herbert, **Die Auswertung pollenanalytischer Ergebnisse.** [The evaluation of pollen analysis results.] *Naturwissenschaftliche Rundschau*, 8(12):480–483, Dec. **1955.** 2 figs., 3 refs. **DWB**—The principles of pollen analysis and construction of dated pollen diagrams are described. Specimen profiles of tree and hazel pollen and of herb pollen back to 8640 B.C. are shown and described, including climatic bearing. *Subject Heading:* **1. Pollen analysis.** —*C.E.P.B.*

MICROCLIMATOLOGY

See: **Plant climate** (Berger-Landfeldt), 7.5–78; **Temp. recording** (Berger-Landfeldt), 7.5–87.

BIOCLIMATOLOGY

See also: **Man in a cold environment** (Burton, Edholm), 7.5–9.

7.5–228 551.586:612:6

Lotmar, R. and Häfelin, J., **Über den Einfluss der Witterung auf den Schwefelstoffwe von Kaninchen.** [On the influence of weather on sulfur metabolism in rabbits.] *Ar für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 7(1):133–145, 1955. 4 figs., 3 t 24 refs. English and French summaries p. 133. **DWB**—During four months the urin certain number of rabbits, which had received radioactively marked sodium-sulfate (Na_2S has been examined daily as to its activity. It resulted that on certain days the secreti sulfur was distinctly above the normal value. This was the case on all cold front days, w had a polar air mass before as well as after their passage. The five cold fronts follow tropical air mass on the other hand produced no biotropic effect on the sulfur metabo *Subject Headings:* 1. Bioclimatology 2. Physiological effects 3. Rabbits.—*Authors' abs*

7.5–229 551.586:613

Undt, W. (*Vienna*), **Erholung und Klima.** [Convalescence and climate.] *Wetter Leben,* Vienna, 7(5/4):61–67, 1955. 10 refs. **DLC**—A general discussion of the relatio between constitutional type, type of cure, disease and climatic effects is presented. climatic characteristics of various types of health resorts, the choice of convalescence pe and the duration of vacations are considered. *Subject Headings:* 1. Health resorts 2. Me climatology 3. Climatotherapy.—*I.L.D.*

7.5–230 551.586:632.9:63

Vámos, Rezső, **Az időjárás és a rizs barnulásos betegségének kapcsolata.** [Rela between weather and the browning disease of rice plants.] *Időjárás,* Budapest, 58(5):273– Sept.–Oct. 1954. table, 2 eqs. **DWB**—The browning disease which causes consider damage among rice plants in Hungary is found to be connected with sudden drops in sum temperature. The author gives his interpretation of the harmful biochemical proce taking place in the paddy field under the influence of temperature fluctuations. *Su Headings:* 1. Plant diseases 2. Temperature drop 3. Bioclimatology 4. Rice 5. Hung —*G.T.*

ENVIRONMENTAL INFLUENCES

See also: **Lake heat balance** (Eckel), 7.5–168; **Ocean currents** (van Dijk), 7.5–180; **Forest snow pack** (Chigirinskii), 7.5–219.

7.5–231 551.58

Anzi, Girolamo (*Univ. of Perugia*), **Continentalità e insularità.** [Continentality insularity.] *Geofisica e Meteorologia,* Genoa, 2(3/4):62–64, May–Aug. 1954. 2 figs., 2 tab 6 eqs. **MH-BH**—Indices of continentality and insularity are developed taking into acc both horizontal and vertical extension. *Subject Headings:* 1. Continentality 2. Insula —*I.L.D.*

SYNOPTIC CLIMATOLOGY

See also: **Synoptic climatology** (Jayamaha), 7.5–135.

7.5–232 551.589

*Vowinckel, E., **Beitrag zur Witterungsklimatologie Südafrikas.** [Contribution to weather-type climatology of South Africa.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* 7(1):11–31, 1955. 9 figs., 11 tables. English and French summa p. 10. **DWB**—The frequencies of main weather types for the Pretoria region: fine weat weakened fine weather, warm air, cold air, monsoon, shower, equatorial, bad weather,

ated and typical isobars, winds, fronts and weather of each shown in charts. The monthly encies of interdiurnal temperature rises and falls, their duration, droughts and rainy ls are tabulated. Hourly rainfall frequencies and a conventional climatic table for ria are given. The annual variation of temperature, rainfall and raindays (3 day means) otted and the singularities discussed. *Subject Headings:* **1. Synoptic climatology eather types 3. Pretoria, S. Africa.**—*C.E.P.B.*

MISCELLANEOUS

COSMIC INFLUENCES

See also: **Meteor trail drift** (Robertson et al.), 7.5–65; **Sunspot effects on temp.** (Xanthakis), 7.5–153; **Freezing nuclei measurem.** (Smith et al.), 7.5–200.

7.5–233 551.590.21

Boute, Carmen, **Wirkungen elektrischer Felder und Strahlungen atmosphärischen und nischen Ursprungs auf das Wasser.** [Effect of electric fields and radiations of atmospheric cosmic origin on water.] *Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. B,* :146–155, 1955. 6 figs., table, 7 refs. DWB—Passing water between iron electrodes hich a weak alternating potential was applied, and subsequent warming, accelerated the ration of dissolved $CaCO_3$ on colloidal iron hydrates obtained by corrosion of the electrodes. lly observations in Brussels and Florence in 1952–54 in a chamber shielded with different als showed (10-day means) correlations up to 0.57. *Subject Heading:* **1. Cosmic influences.** *.E.P.B.*

7.5–234 551.5:541.18: 551.590.21

Neuwirth, R., **Atmosphärische Einflüsse auf die Alterung eines anorganischen Sols.** mospheric influences on the alteration of an inorganic sol.] *Meteorologische Rundschau,* lin, 8 (7/8):108–113, July/Aug. 1955. 8 figs., 13 refs. DLC—The coagulation of colloid parations of arsenic trisulphide was measured daily by a photometric method, controlled electron microscope, for 2 years. Change of coagulation was found to depend on the passage old fronts influencing the troposphere to at least 500 mb. and on the horizontal shear (as a asure of vorticity). The speed of change also increased following increased height of the mb surface. The effect is related to changes of charge on the colloid but the explanation not clear. It may be due to the effect of extraterrestrial 2–5 cm waves on the structure of ter. *Subject Headings:* **1. Meteorological effects on colloids 2. Colloid coagulation.** — *E.P.B.*

7.5–235 551.590.21:541.18

Piccardi, Giorgio (*Dir. Chem. Phys. Inst. Florence Univ.*) and Doat, Henri Yves (*Dir. ental Wasserleitung, Vienna, Unter-Tullnerbach*), **Sulla variazione annuale registrata a enna in base al test inorganico.** [Annual variation registered at Vienna on the basis of an rganic test.] *Geofisica e Meteorologia,* Genoa, 3 (1/2):30, Jan./April 1955. fig. DWB—mparative graph shows a sharp Feb. minimum of T (%) values for both D and (D = shielded, F not) based on 1953 results of tests of precipitation of BiOCl at Vienna Unter-llnerbach near Wiental Wasserleitung. Text states there is a sharp minimum in Feb. in cases, from data at Florence, Brussels and Vienna. Experiments are made in morning and ening, in shielded and unshielded enclosures (*see* 6.5–171, May 1955, *MAB*). *Subject adings:* **1. Annual phyisico-chemical variations 2. Bismuth oxychloride precipitation Solar influences 4. Unter-Tullnerbach, Austria.**—*M.R.*

7.5–236 551.590.21:523.7:550.38

Roberts, Walter Orr (*Dir. High Altitude Obs., Boulder, Colo.*), **Can we blame the sun for ormy weather?** *Popular Mechanics Magazine,* Chicago, 103(6):65–69; 234–240, June 1955. hotos, illus. DWB—A semipopular and well illustrated article on the sun's structure and mperature, the high altitude astrophysical observatory at Boulder and Climax, Colo., the oronography or artificial eclipse simulating telescope at Climax, the work of the observatory.

and the usefulness of results in helping to study or predict magnetic storms which affect ra communication, or even rainfall at Kansas City or cold fronts in the Midwest. *Sub Headings:* **1. Solar physics 2. High altitude observatories 3. Solar-terrestrial relationsh 4. Climax, Colo.**—*M.R.*

OPTICAL PHENOMENA

See also: **Twilight phenomena** (Bigg), 7.5–103; **Geomagnetic disturbances** (Wiese), 7.5–106.

7.5–237 551.593

Richardson, W. E., **Bouquer's [Bouguer's] halo?** *Weather*, 10(10):355, Oct. 19 2 figs., ref. **DWB**—Alston, Nov. 7, 1954, fog bow and glory seen from high ground. *Sub Headings:* **1. Bouguer's halo 2. Ulloa's ring 3. Glories.**—*C.E.P.B.*

7.5–238 551.593.62(0

Khan, Mohd A. R., **Early theories of rainbows.** *Weather*, 10(10):358–359, Oct. 19 **DWB**—Correct explanation was first given by Muhammad Ibn Mas'ud Ibn Muslip Qu Al-Din (born 1236). *Subject Headings:* **1. Rainbow theory 2. History of rainbows** *C.E.P.B.*

7.5–239 551.593.

Ashmore, S. E., **Unusual halo phenomena.** *Meteorological Magazine*, London, 84(99 287–288, Sept. **1955. DWB**—Feb. 5, 1955, at Wrexham, persistent brilliant upper arc contact to 22° halo and a sun-pillar. *Subject Heading:* **1. Halo observations.**—*C.E.P.B.*

7.5–240 551.593.

Crabbe, J. A., **Rare solar haloes.** *Weather*, 10(10):359, Oct. **1955.** fig. **Also:** Ashmo S. E., **Minor halo complex at Wrexham, Feb. 5, 1955.** *Ibid.*, 359–360. **And:** Scorer, R. **The Parry arc.** *Ibid.*, 360, fig. **DWB**—Crabbe describes complex at Sistiana, N. Ita June 13, 1954, with 11° halo and other curious features. Ashmore observed upper arc contact to 22° halo persisting from sunrise to sunset, also sun pillar and parhelion, at Wrexha Feb. 5, 1955. Scorer gives sketch of halo complex in London, March 2, 1954. The Par arc was faint but distinctly colored. *Subject Headings:* **1. Halos 2. Parry arc.**—*C.E.P.B.*

7.5–241 551.593.6

Halo [in] **Atlantic Ocean; South Pacific Ocean; Western Mediterranean Sea; Paci Ocean.** *Marine Observer*, 25(170):213–214, Oct. **1955.** fig. **MH-BH**—Solar halo of radi $14\frac{1}{2}°$ in 7°N 14°W. Lunar halos of 20°10′ (inner edge) in $26\frac{1}{2}$°S 170°W and of 19° in 37° 1°E. Lunar halo complex in 22°S 134°W showed 22° halo, concentric arcs of 75° radi (through sun) and 60° and an antisolar arc (sketch). *Subject Heading:* **1. Halo observation** —*C.E.P.B.*

7.5–242 551.593.65

Ludlam, F. H., **Luminous night clouds.** *Weather*, 10(12):421–423, Dec. **1955.** phot **DWB**—Noctilucent clouds were frequently reported in 1885–1886, rarely in later year From simultaneous photographs heights were calculated as 74–92 km, moving from NE 50–300 m/s. They may be meteor dust or ice crystals on meteor dust. *Subject Headin* **1. Noctilucent clouds.**—*C.E.P.B.*

ELECTRICAL PHENOMENA

See also: **Scatter propagation** (Norton, Wiesner), 7.5–1; **Solar radio noises** (Kawakami et al.), 7.5–147; **Nuclei distrib. in lower troposphere** (Dreisbach), 7.5–199; special bibliography on **Atmospheric Radioactivity,** p. 616.

7.5–243 551.594.1/2:537.792.

Martinoli, C. A. M., **Nuevo soporte y conexión para la determinación del potenci eléctrico atmosférico, con sonda iónica y electrómetro, utilizando método de cero.** [A ne

and and attachment for determination of electric atmospheric potential, with an ionic collector and electrometer, utilizing method of Cero.] *Meteoros*, Buenos Aires, 4(4):324–326, ct./Dec. **1954.** fig. English summary p. 324. **DWB**—A description, illustrated with a agram, of a new stand and attachment for obtaining absolute values of the atmospheric ectric field by means of an ionic collector and electrometer. Although made of metal and of ertical design, the stand does not cause disturbances in the uniform electrical field existing reviously so that the apparatus can be built fairly high in comparison to the measuring round. *Subject Headings:* **1. Electrometers 2. Atmospheric electricity measurement.**—*ased on author's abstract.*

7.5–244 551.594.1:551.43

Reiter, Reinhold (*Munich*), **Ergebnisse luftelektrischer Messungen auf dem Zugspitzplatt n 2500 m Seehohe.** [Results of atmospheric electricity measurements at the Zugspitze, 500 m above sea level.] *Geofisica Pura e Applicata*, Milan, 30(1):155–169, Jan./April **1955.** figs., 2 tables, 4 refs. German and English summaries p. 155–156. **MH-BH**—Besides our ontinuous synoptic records of the air-electric elements in the region of the Zugspitze (Wetterstein Mountains, Bavarian Alps), a measuring excursion has been undertaken to the "Zugspitzplatt" in order to clarify some special questions (Aug. 1954). On this plateau, 2500 m bove sea level, readings of the potential gradient have been recorded with a transportable nstrument and the polar conductivities of the air have been measured. Comparing exactly he readings recorded on the Zugspitze-Peak (Z, 2963 m above sea level) with those recorded on the Zugspitzplatt (P) we could show that the values measured on the peak—in spite of the exposed situation of this station—have to be considered as representative and free from disturbing secondary phenomena. Our former observation that the accessory potential gradient during snowfall has a positive sign, and during rain shows a negative one, has been confirmed. On days when convection prevails, the deviation of the diurnal variation of the potential gradient on P from the diurnal variation on Z indicates distinctly the elevation up to 2500 m, caused by the exchange of nuclei and large ions. During fog lifted up from lower cloud levels (stratus, stratocumulus) potential gradient and polar conductivities on station P show the same behavior as in low altitudes. If station P is reached by descending currents, the negative conductivity sometimes is clearly observed to rise separately. It has been noticed that on the base of a standing lenticular crest cloud there are free electric charges of negative sign, and on the upper surface, probably, positive ones. On the surface or fore part of these clouds a separate increase of the negative conductivity could be measured distinctly. *Subject Headings:* **1. Atmospheric electricity 2. Mountain effects 3. Zugspitze, Germany.**—*Author's abstract.*

7.5–245 551.594.11

*Czyszek, Wacław (*Polish Academy of Sciences*), **Der mittlere tägliche Gang des luftelektrischen Potentialgradienten an ungestörten Tagen in Swider.** [Average course of daily potential gradient of atmospheric electricity during calm days in Swider.] *Acta Geophysica Polonica*, Warsaw, 2(3):149–155, **1954.** 3 figs., 4 tables, 6 refs. Polish summary p. 155. **MH-BH**—Presents results of the study of electric potential gradient daily variation obtained from recordings of 2 Benndorf quadrant electrometers installed at the Swider (near Warsaw) Geophysical Observatory only on 58 perfectly calm days (evenly distributed throughout 1953). The mean daily course shows two maxima—between 6–8 a.m. and 6–8 p.m. through the whole year, except Oct. when there is only one maximum between 4–6 p.m. The main minimum occurs about 4 a.m. and a secondary minimum about 8–10 a.m. in fall and winter and about noon during the rest of the year. The mean yearly value of the potential gradient in 1953 was 82 V/m. *Subject Headings:* **1. Diurnal potential gradient 2. Potential gradient meters 3. Swider, Poland.**—*A.M.P.*

7.5–246 551.594.11

*Hatakeyama, H. and Kawano, M., **On the diurnal variation of atmospheric potential gradient in the Japan Archipelago.** *Papers in Meteorology and Geophysics*, 4(2):55–60, Sept. **1953.** 2 figs., 4 tables, 5 refs. **MH-BH**—Data on average diurnal variation of atmospheric potential gradient at eight Japanese stations (representing both rural and city locations) in

winter and summer are presented in tabular and graphical form and briefly commented. *Subject Headings:* **1. Potential gradient variations 2. Japan.**—*G.T.*

7.5–247 551.594.11:551.594.221:551.508

Kitagawa, N.; Tizuka, T.; Murai, K. and Kobayashi, M., **On some aspects of lightn discharge observed by electrostatic fluxmeter.** *Geophysical Magazine*, Tokyo, 25(3/4):2 242, March **1954.** 7 figs., 9 refs., 3 eqs. **MH-BH**—Field variations due to lightning charges were investigated by means of an electrostatic flux meter the output of which is fe parallel to a magnetic-tape recorder and to an oscilloscope. The great majority of obser field variations are slow field changes with duration ranging from 0.1 to 0.5 sec, the rest con ing of rapid field changes with a duration of 0.001 sec. Such a slow field variation indic that the effective velocity of electric charges neutralized at the inter-cloud discharge is order lower than that of the stepped leader, and that further investigation is necessary understand physically the mechanism of such a discharge. The records of rapid field-cha confirm the existence of a pocket of positive charge in the cloud base. *Subject Headin* **1. Lightning discharges 2. Potential gradient variations.**—*Authors' abstract.*

7.5–248 551.594.13:551.52

Kamiyama, Hiroshi (*Tôhoku Univ.*), **Ion production rate in an atmosphere of exponenti rising temperature with height.** *Tôhoku University, Science Reports, 5th Ser., Geophys* 6(1):11–18, Aug. **1954.** 6 figs., 22 refs., 10 eqs. **MH-BH**—Assuming that the temperat increases exponentially with height above the mesopause, the expression for the distribut of the ion production rate is derived. The effect of the temperature variation is also examin The maximum rate of ion production and the height at which it occurs show the anomal variation in the course of a day, the former being minimum and the latter being maximum noon, in the high region, whereas in the low region their variations follow almost complet CHAPMAN's law which is derived from the assumption of an isothermal atmosphere. It see that the results partially give an account of the anomalous behavior of the F2 layer. *Sub Headings:* **1. Ion production rate with height 2. Isothermal atmosphere.**—*Author's abstrac*

7.5–249 551.594.21:551.57

Wolf, Franz, **Hagelwachstum eine Quelle der Gewitterelektrizität.** [Hail growth source of atmospheric electricity.] *Naturwissenschaften*, 42(24):641–642, Dec. **1955.** 2 re **DWB**—The growth of hailstones must be accompanied by a steady development of electric through the FARADAY-SOHNCKE effect, positive on the hailstone, negative on the water spr carried away. The latter gives the negative region at middle levels, while the break up falling hailstones explains the lower positive region. *Subject Headings:* **1. Thunderstor electricity 2. Hail.**—*C.E.P.B.*

7.5–250 551.594.221:551.508.

Pierce, E. T., **The influence of individual variations in the field changes due to lightni discharges upon the design and performance of lightning flash counters.** *Archiv für M teorologie, Geophysik und Bioklimatologie, Ser. A*, 9(1):78–86, **1956.** 5 figs., table, 4 re German and French summaries p. 78. **DWB**—The types of electrostatic field change > km from cloud—cloud or cloud—earth flashes at Cambridge, England, are examined. Ligh ning flash counters responding only to the electrostatic component are least in error. T performance of a counter operating on a threshold field of 0.9 v/m is tabulated. Only 1% flashes last >1 sec, and none were recorded at a rate >10/min. A simple low frequen circuit with an insensitive period of about 1 sec for counting discharges to earth is describe *Subject Headings:* **1. Lightning counters 2. Cambridge, England.**—*C.E.P.B.*

7.5–251 551.594.25:551.578

Goyer, Guy G. and Handler, George S., **Water-vapor condensation as a cloud-dropl charging mechanism.** *Journal of Meteorology*, 12(6):569–570, Dec. **1955.** fig., 13 re **DWB**—An experimental study of charges produced by condensation was made on drople given by condensation of ion-free water vapor on nuclei of ammonium chloride. No charg was observed on any droplets. *Subject Heading:* **1. Electrical charges on raindrops.**—*C.E.P.*

AURORAS

7.5–252 551.594.5

Meinel, A. B. (*Yerkes Obs.*), **Systematic auroral motions.** *Astrophysical Journal*, Chicago, 122(12):206–208, July **1955.** fig., 6 refs. **DWB, DLC**—A reply to criticism of McLaughlin (*see* 6.7–342, July 1955, *MAB*), Meek (*see* 7.4–298, April 1956, *MAB*), and Bless, Gartlein and Kimball (1955) who deny the conclusions of Meinel and Schulte (1953) that there is a distinct time relationship in direction of motion of auroral rays, etc. Meinel claims that there may not be an exact or detailed local time relationship, but merely a systematic relation which may be hard to detect by the naked eye. The idea that the excitation pattern may reverse itself at noon and midnight is generally accepted but the idea of mass motion is harder for some to accept. The author maintains that evidence exists for such mass motions (electron stream) and illustrates a theoretical current system and two actual current systems schematically. *Subject Headings:* **1. Auroral drift 2. East-west auroral motion 3. Ionospheric winds 4. Electrojet stream theory.**—*M.R.*

7.5–253 551.594.51:523.75:550.385

Beiser, Arthur (*N. Y. Univ.*), **On an interplanetary magnetic field.** *Journal of Geophysical Research*, Wash., D. C., 60(2):155–159, June **1955.** 7 refs., 14 eqs. Also his: **Solar-terrestrial time delays.** *Ibid.*, 60(2):161–164, June **1955.** 6 refs., 11 eqs. **DWB**—1) Considerations suggesting the existence of an interplanetary magnetic field are presented. Such a field would not exceed about 5×10^{-8} gauss, and its presence can explain the observed cutoff in the primary cosmic-ray momentum spectrum. A field existing within the earth's orbit can account for all or part of the observed solar-terrestrial time delays in aurorae and magnetic storms. The time required for the formation of a magnetic field pervading the solar system is less than 10^3 yrs, and its lifetime against decay is probably more than 10^{10} yrs. 2) The observed delay of about 24 hrs between the meridian passage of a sunspot or flare and the onset of an associated magnetic storm or aurora is shown to originate in the magnetic deflection of the ion streams involved. If a solar magnetic dipole is exclusively responsible, its moment must be between 6×10^{27} and 10^{29} gauss. Should both fields act, which is likely, then the above figures represent maxima. *Subject Headings:* **1. Interplanetary magnetic field 2. Solar-terrestrial time delays 3. Auroral physics.**—*Author's abstract.*

7.5–254 551.594.51

Turner, R. G. and Nicholls, R. W., **Intensity measurements of molecular spectra, Pt. 2, An experimental study of band intensities in the first positive system of N_2.** London, Ontario. University of Western Ontario. Dept. of Physics, Contract AF 19(122)-470, Scientific Report, No. 14, April 10, **1954.** 26 p. 3 figs., 7 tables, 13 refs., 4 eqs. **MH-BH**—Integrated intensities of 52 bands of the N_2 first positive system have been measured using a recording infrared spectrometer. These data have been interpreted as vibrational transition probabilities which were compared with theoretical values calculated under the assumption that the electronic transition moment is independent of internuclear separation. The comparison shows that the assumption is not valid for this electronic transition. The experimental band intensities have been used together with the theoretical transition probabilities to determine the dependence of the electronic transition moment upon internuclear separation. Over the range $1.17<r<1.59$ *A* of internuclear separation this dependence may be represented by

$$R_e(r)=\text{const. exp. }(-3.02\,r).$$

(For Pt. 1, *see* 4.7–225, July 1953, *MAB*.) *Subject Headings:* **1. Auroral physics 2. Infrared spectroscopy 3. N_2 spectra.**—*Authors' abstract.*

RADIO METEOROLOGY

7.5–255 551.594.6:523.45

Jupiter emits static (and) **Short waves from stars.** *Science News Letter*, Wash., D. C., 67(16):243, April 16, **1955.** **DLC**—Burke and Franklin detected radio noise from Jupiter that sounded like "thunderstorm interference on a broadcast receiver." The sferics are

heard at 22 Mc about one day out of three during the 6 min when the planet crosses the narr path of their radio telescope in Seneca, Maryland. *Subject Headings:* **1. Radio noise 2. Jupi 3. Sferics from planets.**—*W.N.*

7.5–256 551.594.7:621.396 53

Furutsu, Koichi, **Propagation of electro-magnetic waves over a flat earth across a bound separating different media and coastal refraction.** *Japan. Radio Research Laborator Tokyo, Journal,* 2(7):1–49, Jan. **1955.** 5 foot-refs., numerous eqs. **DWB**—The theory propagation of radio wave over a flat homogeneous earth, transmitted across a boundary discontinuity, such as a coast-line, is theoretically treated in three dimensional space. T derived formula for wave strength is exclusively expressed in the terms of the functions of u form: $U(z,n)=\int_z^\infty dxe^{-x^2}\int_{nx}^\infty e^{-x^2}dy$, which has a close connection with the function $G(a$ introduced by CLEMMOW. The coastal refraction, the refraction of wave path at a coast li is also treated, and the refraction angle is theoretically derived in a simple form for practi use. Further, the wave propagation across two or more boundaries of discontinuities is a discussed. *Subject Headings:* **1. Electromagnetic wave propagation 2. Radio wave propag tion 3. Refraction of electromagnetic waves.**—*Author's abstract.*

7.5–257 551.594

Gordon, William E., **Radio scattering in the troposphere.** *Institute of Radio Enginee N. Y., Proceedings,* 43(1):23–28, Jan. **1955.** 8 figs., 11 refs., 19 eqs. **DWB**—The theory radio scattering in the troposphere is modified in the light of recent observations of the fluctu tions in refractive index. The theory is applied to the communication problem and yiel some characteristics which are peculiar to the scattering mechanism. One characteris imposes a limit on the maximum size of an antenna which yields its full theoretical gain. T characteristic is deduced from the prediction of diversity distance. Height gain is also deduc from diversity distance. Other characteristics are derived pertinent to the communicati problem, including fading rates and frequency bandwidth of the scattering mechanism. *Subje Headings:* **1. Radio wave scattering 2. Troposphere.**—*Author's abstract.*

7.5–258 551.594.7:551.508.

Hirao, Kunio and Maruyama, Hiroyuki, **Special instruments for observations and analys of VHF fading.** *Japan. Radio Research Laboratories, Tokyo, Journal,* 2(8):207–216, Ap **1955.** 12 figs., 2 refs., 5 eqs. **DWB**—The autocorrelation analysis has been carried out f the examination of fading of VHF wave. For the sake of this analysis, the recording syste which is linear in voltage in its recorded fluctuation and the relay computer for Σxy are bo designed and constructed. A few examples of the results are introduced in the present pape The necessary duration of observation and intervals of reading are also discussed in the prese report in order to avoid misunderstanding about the statistical quantities of fading. *Subje Headings:* **1. Radio fading 2. Radio fading instruments.**—*Authors' abstract.*

7.5–259 551.594.7:621.39

Kono, Tetsuo; Nishikori, Kiyoshi; Fukushima, Madoka; Ikeda, Masao and Yoshid Noriaki, **Experimental studies on diffracted waves from a mountain at 3000 Mc/s.** *Japa Radio Research Laboratories, Tokyo, Journal,* 2(8):163 180, April **1955.** 21 figs., 4 table 8 refs. **DWB**—Radio transmission experiments were made at the frequency of 3000 Mc over the 243 km path between Kawaguchi and Ryozen in Sept. and over the 166 km pat between Kawaguchi and Izumi in Dec. 1954. Mt. Yamizo lies in the midway of these path Transmission loss and fading characteristics obtained in this experiment are much differe from that of a VHF radio wave experiment over a mountain. In the first experiment, t median value of the field intensity agreed approximately with that calculated by FRESNEL knife-edge diffraction theory, but in the second experiment it was about 10 db below t calculated value. *Subject Headings:* **1. Radio transmission ducts 2. Radio fading 3. Radi wave diffraction 4. Japan.**—*Authors' abstract.*

7.5–260 550.384:551.594.7:551.510.52

Tao, Kazuhiko, **On the relationship between the hourly variation of field strength and the structure of the lower atmosphere.** *Japan. Radio Research Laboratories, Tokyo, Journal,* (8):181–191, April **1955.** 13 figs., table, 10 refs. **DWB**—It is clear that the relationship between the hourly variation of field strength and the distribution of the refractive index in the lower atmosphere is ascertained by the actual data from captive balloon observations, i.e., the high level of field strength corresponds to the abnormal distribution of the refractive index. Moreover, it is clear that the abnormal distribution of the refractive index can be explained from the view-point of synoptic meteorology. *Subject Headings:* **1. Geomagnetic variations 2. Tropospheric refraction.**—*Author's abstract.*

ACOUSTICAL PHENOMENA

7.5–261 551.596.1:551.557(789)

Kennedy, William B.; Brogan, Lee and Sible, Norman J., **Further acoustical studies of atmospheric winds and temperatures at elevations of 30 to 60 kilometers.** *Journal of Meteorology,* 12(6):519–532, Dec. **1955.** 10 figs., 4 tables, 9 refs., 16 eqs. **DWB**—Results of firing 200 lb charges of TNT and recording elevation and azimuth of sound wave by an array of microphones are described. Operations in Colorado, Oct. 31, 1951–Aug. 28, 1952, confirmed the broad conclusions of the earlier Colorado series. Those in New Mexico bihourly Oct. 20–24, 1952 (T-Day) are fully treated. The winds and temperatures between 25 and 55 km are tabulated and plotted. The average wind was 23 39 m/s from 242–276°, but there were marked fluctuations over very short periods. Temperature increased as wind decreased with advancing time of day. *Subject Headings:* **1. Acoustical upper wind measurement 2. New Mexico.**—*C.E.P.B.*

PART II. ANNOTATED BIBLIOGRAPHY ON NATURAL AND ARTIFICIAL RADIOACTIVITY IN THE ATMOSPHERE

By: *Geza Thuronyi*

INTRODUCTION

The primary subject of this bibliography is the artificial radioactivity in the atmosphere originating from atomic or thermonuclear explosions. In addition to this principal subject, several peripheral fields such as the nonradioactive effects of nuclear weapons, natural radioactivity in the atmosphere and the use of radioactivity in other disciplines (tracer techniques, radioactive dating methods, instruments using radioactive elements) have been included.

Several other pertinent subjects such as atmospheric pollution in general, atmospheric diffusion studies and basic climatological studies for atomic energy installations or tests, have not been covered in this bibliography. The reader interested in such subjects should consult other issues of *Meteorological Abstracts and Bibliography*, like Vol. 1, No. 1, Jan. 1950, for a bibliography on **atmospheric pollution** by smoke and gases (240 references), Vol. 1, No. 6, June 1950, for a bibliography on **volcanic dust** (66 references), Vol. 4, Nos. 1 and 2, Jan. and Feb. 1953, for bibliographies on **turbulence, turbulent diffusion and exchange** (547 references), and individual items like 3.5–111, 4.3–25, 4.4–152, 4.4–274, 5.4–80, 6.1–346 and 6.11–6 for **radioactivity in rocks,** 2.2–160, 2.2–161 and 5.5–23 for **atmospheric ionization** due to radioactivity, 3.3–207 and 3.8–55 for radioactive snow gages.

An annotated bibliography has been prepared on **The transport and deposition of atomic debris** by R. J. List of the U. S. Weather Bureau (see 7E–190) and published recently (Jan. 20, 1956) by the U. S. Atomic Energy Commission. We have made extensive use of that bibliography.

The problem of possible cumulative effects of atomic debris has been discussed by scientists in several countries (especially the U. S., Japan, France, Germany, Britain) who have come to conclusions varying in detail if not in principle. Several popular works touch on this aspect.

The bulk of the material has naturally been taken from the literature of the last decade. Only a very few representative papers have been chosen from the earlier literature.

Many of the most informative sources in the field covered are still restricted in most countries. This bibliography, therefore, cannot be considered to be exhaustive, but rather only a guide to available literature on a subject of great concern to the public as well as to scientists.

The following subject outline gives an idea of the more detailed scope of the subject matter and a geographical outline shows the extent of the areas concerned.

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1901

7E–1 551.594.

Rutherford, E., **Emanations from radio-active substances.** *Nature*, London, 64(1650):157–15 June 13, **1901. DLC**—Reports experiments which lead to the conclusion that emanation fro radium is a radioactive gas or vapor with a molecular weight between 40 and 100. *Subject Headin* **1. Radioactive emanations.**—*G.T.*

7E–2 551.594.1

Elster, J. and Geitel, H., **Über eine fernere Analogie in dem elektrischen Verhalten der natü lichen und der durch Becquerelstrahlung abnorm leitend gemachten Luft.** [A further analog between natural air and air rendered abnormally conductive by means of Becquerel rays.] *Ph sikalische Zeitschrift*, 2(40):590–593, July 6, **1901.** refs. **DLC**—RUTHERFORD experimentall demonstrated the existence of gaseous radioactive emanations from radioactive substances. Ana gies between properties of natural air and air brought into contact with radioactive objects appe to indicate that radioactive emanations are present in the atmosphere. *Subject Heading:* **1. Radio activity in the atmosphere.**—*G.T.*

1926

7E–3 551.594.14:551.510.

Schmidt, Wilhelm, **Zur Verteilung radioaktiver Stoffe in der freien Luft.** [Distribution radioactive substances in the free atmosphere.] *Physikalische Zeitschrift*, 27(11):371–378, June **1926.** fig., 4 tables, refs., 10 eqs. **DLC**—Height distribution of radioactive substances in th atmosphere is calculated on the basis of new concepts of random motion in free air. Values of th different radioactive substances are tabulated for various heights as fractions of their ground-leve concentration. *Subject Headings:* **1. Radioactive emanation distribution 2. Diffusion equation** —*G.T.*

1934

7E–4 551.594.14

Wait, G. R. and McNish, A. G., **Atmospheric ionization near the ground during thunderstorms.** *Monthly Weather Review*, 62(1):1–4, Jan. **1934.** 5 figs., refs. **DLC**—Data on ionization values measured during a number of thunderstorms are presented. Ionization is found to increase in proportion with rainfall intensity. This is attributed to the presence of radium decay products (specially RaB and RaC) in rainwater. Radium emanation from the soil is carried up into the air and presumably dissolved into existing cloud droplets where it disintegrates, producing RaA, RaB and RaC. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Ionization.**—*G.T.*

1935

7E–5 551.574.1:551.594.14

Aliverti, Giuseppina and Rosa, G., **Zur Frage der Adsorption van RaEm an Kernen.** [On the adsorption of radium emanation on nuclei.] *Beiträge zur Geophysik*, 44(2):107–111, **1935.** fig., tables. Italian and German summaries p. 107. **DLC**—ALIVERTI's method of measurement of atmospheric radioactivity is discussed. Considering the presence of active thorium-precipitation in the atmosphere and the results of experiments, it is concluded that the adsorption of radium emanation on nuclei is very improbable. (*Same item as* 6H–97, Aug. 1955, *MAB.*) *Subject Headings:* **1. Nuclei theories 2. Radioactivity in the atmosphere 3. Nuclei and radioactivity.**—*N. A. Zikeev*

1936

7E–6 551.594.14

Garrigue, Hubert, **Radioactivité de l'air en montagne.** [Radioactivity of the air on mountains.] Thesis (Ph.D. in Physical Sciences)—Univ. of Paris, May **1936.** 83 p. 36 figs., 6 photos, 13 tables, 26 refs. **DLC**—Various instruments and methods for measuring radioactivity in the air and under snow are described in detail, including portable equipment designed by the author. From measurements made at Pic du Midi Observatory it is deduced that snow shields off part of the radon normally emanating from fissures in the soil. Radon accumulated under the snow decays in calm weather; it is liberated on slopes exposed to wind. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Pic du Midi, France.**—*G.T.*

1941

7E–7 551.594.14:551.574.1

Freed, Simon and Schultz, Melvin L., **Deposition of atmospheric radioactivity on objects exposed to air streams.** *Franklin Institute, Philadelphia, Journal*, 231(4):345–355, April **1941.** 2 figs., tables. **DLC**—When air was blown against various objects, radioactive material was deposited which was identified as the decay products of radon and thoron. The deposition took place on glass, mica, and on the metals copper, brass, steel, aluminum, but not lead. It was immaterial whether the metals were grounded or insulated. No appreciable electrical potential was produced on the objects by the streaming gas. It is inferred that smoke, dust, etc. blown about in the atmosphere gathers radioactive and hence ionizing substances. A computation is included on the proportion of radioactive nuclei in the atmosphere which might be expected to be uncharged under equilibrium conditions. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Nuclei and radioactivity.**—*From authors' abstract.*

7E–8 551.594.14:575.7

Krebs, Adolf, **Radioaktive Beimengungen der Luft als bioklimatische Faktoren.** [Radioactive atmospheric admixtures as bioclimatic factors.] *Meteorologische Zeitschrift, Bioklimatische Beiblätter*, 8(3/4):81–82, **1941.** refs. **DWB**—Average radioactive emanation content of free air is 10^{-16} c/cm^3; in narrow valleys values up to 10^{-14} c/cm^3 may be reached; in closed rooms and cellars 10^{-11} c/cm^3 and more has been measured. Values of this order may be considered significant from a biological point of view. According to new regulations in Germany, 15 Mâche units (5.46×10^{-9} c/l) are maximum permissible emanation content in mines. *Subject Headings:* **1. Biological effects of radioactivity 2. Radioactivity in the atmosphere.**—*G.T.*

7E–9 551.594.14:532.72:551.511

Lettau, H., **Anwendung neuerer Ergebnisse der Austauschlehre auf zwei luftelektrische Fragen.** [Application of recent results of austausch research to two problems in atmospheric electricity.] *Gerlands Beiträge zur Geophysik*, 57(3/4, Benndorf-Heft):365–383, **1941.** 3 figs., 4 tables, 10 refs., eqs. **DLC**—The distribution of radioactive substances in the atmosphere is determined theoretically by assuming linear height dependence of austausch. According to the calculations, total radium

emanation content in a vertical column of air is about 27×10^{-12} c/cm². This indicates a sup of 57×10^{-18} c/cm² sec, which is in agreement with observed values. Earlier theories are also viewed. *Subject Headings:* **1. Radioactive emanation distribution 2. Diffusion equations.**—*G.T*

1946

7E–10 551.594

Fearson, R. E.; Engle, A. Wendell; Thayer, Jean et al., **Results of atmosphere analyses d at Tulsa, Oklahoma, during the period neighboring the time of the second Bikini atomic bomb te** *Physical Review*, 70(7/8):564, Oct. 1/15, **1946.** fig. **DLC**—Radioactive concentrates were prepar from the atmosphere on July 26, July 28, and August 30, 1946. Data on July 26 and Aug. 30 w explained as natural radioactivity. Data on July 28 assumed to be from new rare radioactive g of atomic number 86, having an effective half-life of 82 min. *Subject Headings:* **1. Radioactiv in the atmosphere 2. Radioactive fallout 3. Tulsa, Okla. I. Swift, Gilbert II. Johnson, Irvi** —*R. J. List.*

7E–11 551.594

Herzog, G., **Gamma-ray anomaly following the atomic bomb test of July 1, 1946.** *Physi Review*, 7(3/4):227–228, Aug. 1/15, **1946. DLC**—A sensitive gamma-ray meter in Houston, Tex. indicated an increase, reaching a maximum of 77% over background, from 8 p.m. July 4, to 7 p. July 5, 1946. The maximum occurred 108 hrs after the explosion, corresponding to a speed of ov 60 mi/hr from Bikini. *Subject Headings:* **1. Gamma ray anomalies 2. Bikini atom bomb tes 3. Houston, Texas.**—*R. J. List.*

1948

7E–12 551.594.14:551.508.

Aliverti, G., **Su la camera di ionizzazione e il suo uso in misure quantitative di radioattiv atmosferica.** [The ionization chamber and its use in quantitative measurement of atmosphe radioactivity.] *Annali di Geofisica*, Rome, 1(3):478–487, July **1948.** 3 figs., tables. **DWB** A technique for indirect measurement of atmospheric radon content is described in detail and complete record is given of such a measurement made with the author's method. *Subject Heading* **1. Radioactivity measurement techniques 2. Ionization chambers.**—*Transl. of author's abstract.*

7E–13 551.510.42:551.594.

Carmichael, H. and Tunnicliffe, P. R., **Measurement of alpha-active dust in the atmosphe** *Journal of Industrial Hygiene and Toxicology*, 30:211–227, July **1948.** 17 figs., 6 refs. **DSG** Discussion of radioactivity of atmospheric dust and effect when absorbed into body; decay curve apparatus; filter, precipitator, airflow measurements, methane proportional counter; effect of volta on collection, etc; determination of various radioactive elements. (*Same item as* A–206, Jan. 195 *MAB.*) *Subject Headings:* **1. Atmospheric pollution 2. Radioactivity in the atmosphere 3. Publ health.**

7E–14 551.510.42:628.53:551.594.

U. S. Brookhaven National Laboratory, **Scientific progress report, Jan./July 1948.** Edite and issued by the Information and Publications Div., Brookhaven National Laboratory, Associate Universities, Inc. [**1948?**] 48 p. 13 figs. (incl. photos.) **DWB**—Among the various activities Departments reported (Physics, Chemistry, Biology, Medicine, Engineering, Reactor Dept.), t work in meteorology is reported on p. 25–26. Staff includes 4 professional meteorologists and weath technicians, 3 computers and 2 secretaries. The main work is in study of relation between weath and behavior of stack effluents for radiation protection purposes. Instruments which have bee procured and installed are described. Routine and special operations, forecasts and plans f future investigations are mentioned. *Subject Headings:* **1. Radioactive effluents 2. Atmospher pollution studies 3. Stack meteorology 4. Brookhaven, N. Y.**—*M.R.*

1949

7E–15 551.510.42:628.53:551.594.

Beers, Norman R., **Stack meteorology and atmospheric disposal of radioactive waste.** *N cleonics*, New York, 4(4):28–38, April **1949.** fig. 7 photos, 7 refs., eq. **DLC**—Survey of proble of atomic pollution disposal and investigations carried out at Brookhaven, N. Y., with 420 ft towe micrometeorological installations and artificial smoke ejector. Many photographs show equipme in operation under varying diurnal turbulence conditions. (*Same item as* 4.11–47, Nov. 195 *MAB.*) *Subject Headings:* **1. Atmospheric pollution 2. Radioactive effluents 3. Stack meteo ology 4. Brookhaven, N. Y.**—*M.R.*

7E–16 551.594.14

Garrigue, Hubert, **La recherche du nuage radioactif.** [Investigation of the radioactive cloud.] *France. Ministère de l'Air, Publications Scientifiques et Techniques*, No. 228, Paris, **1949.** 23 p. 2 figs., plates. Preface by Jean Cabannes. **DLC**—In three out of 23 flights at 6000 m over France in July 1946, an unknown radioactive material with half-life of 25±5 hours was detected. Average concentration 0.013×10^{-16} c/cm³ radon equivalent. The first detection was on July 20, 1946 20 days after the first explosion at Bikini. Similar material was detected in 6 out of 15 flights in July 1949, the first on July 2, 27 days after the Eniwetok test. Average concentration 0.0001×10^{-16} c/cm³. *Subject Headings:* **1. Radioactive fallout data 2. Airplane sampling of radioactivity 3. France. I. Cabannes, Jean.**—*R. J. List.*

7E–17 551.594.14

Garrigue, Hubert, **Sur la radioactivité de l'atmosphère.** [On the radioactivity of the atmosphere.] *Académie des Sciences, Paris, Comptes Rendus*, 228(20):1583–1584, May 16, **1949. DLC**—A radioactive substance with a half-life of 25 hrs was detected in aircraft flights at about 6000 m in the summer of 1946 and again, in much weaker concentration, in the summer of 1948. Highest value reported, Aug. 1, 1946, at 6000 m, 2.0×10^{-18} c/cm³. Observations at Puy-de-Dôme, 1500 m, gave no definite positive results. Speculation that material is from Bikini tests or possibly of meteoric or cosmic ray origin. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Airplane sampling of radioactivity 3. France.**—*R. J. List.*

7E–18 551.594.14

Webb, J. H., **The fogging of photographic film by radioactive contaminants in cardboard packaging materials.** *Physical Review*, 76(3):375–380, Aug. 1, **1949.** 3 figs., 6 tables. **DLC**—Film packed in strawboard produced in Vincennes, Ind. on August 6, 1945, exhibited many small exposed areas after a three-week contact. About 600 small circles of the board coinciding with the spots were punched out and counted. Beta-activity appreciably above background was observed, α-activity was negligible. The half-life of the β-activity during Oct. and Nov., 1945, averaged about 30 days. A similar phenomenon occurred in strawboard manufactured in Tama, Iowa, during Sept., 1945. It was concluded that the activity came from fission products in the water supply, and was a result of the atom-bomb detonation in New Mexico on July 16, 1945. *Subject Headings:* **1. Radioactivity in packaging materials 2. Atomic explosion effects 3. Vincennes, Indiana.**—*R. J. List.*

1950

7E–19 551.594.12:551.521.64

Aliverti, Giuseppina, **Radioattività atmosferica.** [Atmospheric radioactivity.] *Rivista di Meteorologia Aeronautica*, 10(2):3–9, April–June **1950.** 1 fig., 1 table. Italian, French, English and German summaries p. 3. **MH-BH**—Three causes of ionization of air are considered: cosmic radiation, radioactivity from the soil and radioactivity in the air. The relative importance of the three is discussed and quantitative estimates, together with measurements made for the ionization based on soil emanations and other factors, are given. Results obtained by several investigators tabulated. Effect of weather conditions, turbulence, altitude, etc. also discussed. (*Same item as* 2.6–148, June 1951, *MAB.*) *Subject Headings:* **1. Ionization 2. Radioactivity in the atmosphere.**—*M.R.*

7E–20 551.594.1

Hess, Victor F. and Vancour, Roger P., **The ionization balance of the atmosphere.** *Journal of Atmospheric and Terrestrial Physics*, 1(1):13–25, **1950.** 4 figs., 5 tables, 12 refs., 6 eqs. **MH-BH**—Authors examined, by new methods at Fordham, ionization I (pairs of ions produced in 1 cc. air per sec.) due to hard (filtered through 10 cm iron) and soft cosmic radiation and to radioactive material in air and ground. At 1 m results gave:

Cosmic rays	hard	1.51 I
	soft	0.27 I
Alpha rays		1.76 I
Beta rays		0.40 I
Gamma rays	air	0.15 I
	ground	3.0 I

From the total, 7.2 I, law of recombination and average life of small ions (observed, same site, 10.6 sec.) the number of small ions in equilibrium is 70–80 per cc. Site is near a large city, average nuclei 40,000 per cc. (*Same item as* 3.1–181, Jan. 1952, *MAB.*) *Subject Headings:* **1. Ionization 2. Radioactivity in the atmosphere 3. New York, N. Y.**—*C.E.P.B.*

7E–21 551.594.14

Hess, V. F., **New studies on the radioactivity of the atmosphere.** *Archiv für Meteorologie Geophysik und Bioklimatologie, Ser. A,* 3(1/2):56–63, **1950.** 3 tables, 6 refs., 6 eqs. English German and French summaries p. 56–57. **DWB**—The effect of the gamma rays from radioactive substances in the atmosphere near New York was measured in an ionization chamber; it averaged 0.15 I (ion pairs/cm³/sec) with considerable day-to-day variations. Alpha rays from radon and its decay products gave 0.93 I and from thoron and its decay products 0.83 I. The radon content averaged 46×10^{-18} c/cm³. (*Same item as* 2.2–163, Feb. 1951, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. New York.**—*C.E.P.B.*

7E–22 551.510.42:628.53:551.594.14

Lowry, Philip H., **The theoretical ground-level dose-rate from the radioargon emitted by the Brookhaven Reactor stack.** Upton, N. Y., Brookhaven National Laboratory, July **1950.** 33 p. 24 figs., 9 tables, 15 refs., 28 eqs. **DWB**—By means of theoretical and empirical data on weather (wind, turbulence, etc.) and oil fog concentration measurements, tables and templates were compiled and are presented for calculating the mean hourly ground-level concentration of A^{41} during various meteorological conditions for distances up to 15 km from the stack. The factors considered are rate of emission, exit velocity from stack, height and diameter of stack, mean wind speed and direction, type of gustiness and mean hourly direction distribution. The instantaneous maximum concentration as a function of distance is also mentioned. Results applicable to any similar installation in flat terrain regardless of height of stack. (*Same item as* 3.7–83, July 1952, *MAB.*) *Subject Headings:* **1. Turbulent diffusion 2. Atmospheric pollution 3. Radioargon concentration 4. Radioactive effluents 5. Brookhaven, New York.**—*M.R.*

7E–23 551.594.14:551.508.99

Siksna, Reinhards, **Photographic emulsion method applied to the investigation of radioactive deposits from atmospheric air.** *Tellus,* 2(2):89–92, May **1950.** 5 figs., 7 refs. Also his: **Radioactivity induced from the atmospheric air, investigated with the photographic emulsion method.** *Arkiv för Geofysik,* Stockholm, 1(2/4):123–147, **1951.** 18 figs., 8 tables, refs. English summary p. 146–147. **MH-BH**—The method which is described in detail proves very sensitive to weak radioactive deposits on objects suspended in air which is contaminated. Experimental data are discussed and illustrated. (For fuller abstracts, *see* 11–49 and 4.6–241, Nov. 1950 and June 1953, *MAB.*) *Subject Headings:* **1. Radioactivity measurement techniques 2. Stockholm, Sweden.**—*M.R., W.N.*

7E–24 551.577.1:551.594.14

Stefanizzi, A., **On the radioactivity of atmospheric precipitates.** *Journal of Geophysical Research,* 55(4):373–378, Dec. **1950.** 2 figs., 2 tables, 9 refs., eq. **MH-BH**—The method of filtration was used for separating the radioactive products of precipitates. Thirty-three cases of atmospheric precipitation were analyzed for radioactivity. The curve of the logarithm of saturation intensity of the precipitate plotted against time indicates that only the decay products of radon were present in the precipitates. The author concludes that some radioactivity was acquired by precipitates during their fall from the clouds to ground level; that snow is more active than rain; and that rain in thundershowers is more active than ordinary rain. Also presence of thoron decay products in precipitates was detected. (*Same item as* 2.8–111, Aug. 1951, *MAB.*) *Subject Heading:* **1. Radioactivity in the atmosphere.**—*I.L.D.*

7E–25 662.2:539.1(02)

U. S. Scientific Laboratory, Los Alamos, New Mexico, **Effects of atomic weapons.** Prepared for and in cooperation with the U. S. Dept. of Defense and the U. S. Atomic Energy Commission. Wash., D. C., U. S. Govt. Printing Office, June **1950.** 456 p. figs., tables, refs., eqs. Price: $1.50. Another edition, identical with Official edition, published Wash., D. C., by Combat Forces Press, Aug. **1950. DLC**—This is the most authoritative and comprehensive book on atomic bombs now available to the general public. It deals with: explosions, shocks from air and underwater bursts, physical damage from air, ground and underwater shock, thermal radiation from the fire ball, incendiary effects, nuclear radiation, contamination and its measurement, decontamination, effects on human beings, protection of personnel, etc. In Appendix 7 is given the latest method for computing meteorological trajectories from the radioactive cloud. Fallout is treated thoroughly and quantitatively in respect to air currents, rain, etc. in Ch. 8 (p. 267–276), and underwater or underground explosions, including base surge, dust contamination, etc., on p. 277–287. *Subject Headings:* **1. Atomic explosion effects 2. Radioactivity in the atmosphere 3. Textbooks. I. U. S. Dept. of Defense II. U. S. Atomic Energy Commission III. Hirschfelder, J. O.** (*ed.*) **IV. Effects of atomic weapons.**—*M.R.*

1951

7E–26 551.521.9:536.33:551.586:612

Buettner, Konrad J. K., **KKK robe, light skin help foil A-bomb heat.** *Science News Letter,* 15):231, Oct. 13, **1951.** photo. **DWB**—Brief report on experiments made by the author for U. S. Air Force School of Aviation Medicine in San Antonio, Texas. The experiments carried on heat created with a sun reflector are said to have shown that only 10% of the heat rays to ich a person might be exposed by A-bomb are reflected by black skin and 40% by white skin. hooded suit and aluminum foil are suggested as best available shield against intense heat. (*Same n as* 4.4–141, April 1953, *MAB.*) *Subject Headings:* **1. Aviation medicine 2. Atomic heat effects. U. S. School of Aviation Medicine.**—*G.T.*

7E–27 551.524:620.92:539.1

Chernick, J., **Dependence of reactor kinetics on temperature.** *U. S. Brookhaven National boratory, BNL* 173 (T-30), Dec. 20, **1951.** 38 p. table, 5 figs., 8 refs., 58 eqs. **DWB**—Non-ear temperature effects, which are important in thermal stability of reactors and experiments th reactors, are treated mathematically. It has been found that when the temperature is too w and is brought up to standard by the nuclear reactions, it tends to rise too fast and "overshoot," nding to oscillations which are gradually damped. Attempts at solving this sort of a reaction e set forth in detail and examples given. *Subject Heading:* **1. Temperature effects on nuclear actors.**—*M.R.*

7E–28 551.594.14:551.506.9

*Cherubin, L. J. et al., **Evaluation of the effects of atomic bomb detonations in the state of evada on air-borne contamination at Knolls Atomic Power Laboratory, Knolls site and environs.** *. S. Atomic Energy Commission, Report,* No. KAPL-559, May 7, **1951.** 15 p. 3 tables. **DLC**—ontamination of the atmosphere with radioactive elements above the normally expected levels curred at KAPL—Knolls, Sacandaga, and West Milton sites—soon after the first atomic bomb as exploded at the Nevada testing station on Jan. 27, 1951. Significant increases in air-borne dioactivity were established by radioactive particle determinations. Air and precipitation mples disclosed significant fission product content for the first time. Nuclear film studies of pha tracks from snow and rain sample residues and from an air filter revealed the presence of U-235 nd plutonium. Radioactive decay studies of precipitation residues indicate an apparent half-life f 2.6 to 4 days (~90%) and longer (approx. 19 days and 100 days, 10%). Beta activity with redominant energy of 0.3 mev is indicated. Abnormal findings at the Knolls and West Milton tes were indicated as late as March 16, 1951. Findings after Feb. 18, 1951 may be attributed to esumption of dissolving and subsequent separations operations in the Separation Plant at KAPL. o significant health hazard to this locality is attributed to the air-borne contamination produced y the Nevada tests. *Subject Headings:* **1. Radioactive fallout data 2. Schenectady, N. Y.**—*uthors' abstract.*

7E–29 551.594.14

Garrigue, Hubert, **Recrudescences d'anomalies dans la radioactivité de l'air à moyenne altitude.** [Renewal of anomalies in atmospheric radioactivity at middle altitude.] *Académie des Sciences, Paris, Comptes Rendus,* 232(9):827–829, Feb. 26, **1951.** ref. **DLC**—Samples taken in flight at 000–3500 m on Jan. 13 and 14, 1951 show A activity of 0.03×10^{-18} c radon equivalent, which is hree times the maximum found since Jan. 1950. *Subject Heading:* **1. Radioactivity in the atmos-here.**—*G.T.*

7E–30 551.594.14:551.574.1

Garrigue, Hubert, **L'invasion d'air radioactif d'origine atomique et son influence sur les pré-cipitations atmosphériques.** [The invasion of radioactive air of atomic origin and its effect on precipitation.] *Académie des Sciences, Paris, Comptes Rendus,* 232(10):1003–1004, March 5, **1951. DLC**—On Jan. 13, 1951 and Feb. 3, 1951 a radioactive complex "A," observed first after the Bikini atomic explosion, was detected anew in France. The radioactive cloud observed may be of direct atomic origin or from products of the explosion. After the explosion a large part of the radioactive cloud extends into the stratosphere, a part forms condensation nuclei. It is concluded that although the principal area of contamination from an atomic explosion is rather restricted, radioactive condensation nuclei will cover a large portion of the globe. (*Same item as* 3.1–182, Jan. 1952, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. Radioactive condensa-tion nuclei 3. Atomic explosions 4. Bikini atom bomb tests 5. France.**—*I.L.D.; G. C. Bristow.*

7E–31 551.594.14:551.574.1:551.509.67

Garrigue, Hubert, **Recherches sur la radioactivité de l'air libre.** [Research on the radioactivity of free air.] *Académie des Sciences, Paris, Comptes Rendus,* 233(16):860–862, Oct. 15, **1951.** refs.

DWB—Data obtained through measurements from the ground and in flight for the period M through May 1951 are presented and claimed to confirm the existence of a complex radioa particle with a half-life of several hours, which had been anticipated as early as 1946. For the time this particle could be observed from the ground Other data chosen from the period through 1951 are arranged with a view to proving that the abundant precipitation lately notice over France (and definitely claimed by the author to be the result of condensation nuclei emer from atomic explosions) washed out radioactive particles from the lower atmosphere. Arti precipitation is suggested as a possible means of defense against air pollution from radioacti (*Same item as* 4.6–240, June 1953, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosp 2. Air sampling and analysis 3. Condensation nuclei 4. Artificial precipitation 5. France.**—

7E–32 551.594.14:551.5

Garrigue, Hubert, **Recherches de radioactivité au sommet du Puy-de-Dôme.** [Researche radioactivity at the top of Puy-de-Dôme.] *Académie des Sciences, Paris, Comptes Rendus,* 233 1447–1448, Dec. 3, **1951. DLC**—Snow collected at Puy-de-Dôme which fell on Nov. 19–20, 1 showed β-activity about 43% above background with an apparent half-life of 10 days. Specula on role of particles as condensation nuclei. *Subject Headings:* **1. Radioactivity in snow 2. Puy Dôme, France.**—*R. J. List.*

7E–33 551.5:539.1:6

Holzman, Benjamin G., **The effect of atomic bomb explosions on weather.** *Weathera* 4(1):3–4, 9, Feb. **1951.** fig. **MH-BH**—The physical reasons as to why an atomic explosion car produce directly thunderstorms, rain or hurricanes are presented. It can affect weather indire by causing fires which may sustain convection for a long time or when exploded in shallow w by giving rise to base surge which may become a stratocumulus cloud from which rain falls. (*S item as* 2.11–6, Nov. 1951, *MAB.*) *Subject Heading:* **1. Atomic explosion, effects on weather.**—*I.T*

7E–34 551.509.6:623.45:551.

Holzman, Benjamin G., **Meteorological aspects of the atomic "Base Surge."** *Amer Meteorological Society, Bulletin,* 32(7):251–258, Sept. **1951.** 8 figs. **DWB**—The effects of the un water detonation of an atomic bomb at Bikini are described and the "base surge" wave (wl resembles the outflow of cold air from an intense summer thunderstorm) beautifully illustrated several photographs taken from different points and at different stages. In addition to the "c front" effects, the cloud formations, precipitation and other condensation processes are revea with remarkable vividness in this series of pictures. (*Same item as* 3.5–91, May 1952, *MA Subject Headings:* **1. Bikini atom bomb tests 2. Base surge 3. Cloud formations 4. Bik Marshall Islands.**—*M.R.*

7E–35 551.594

†Israël, Hans, **Radioactivity of the atmosphere.** (In: **Compendium of meteorology.** Bost American Meteorological Society, **1951.** p. 155–161. fig., 6 tables, 63 refs.) **DLC**—Emanati (α, β and γ) from radioactive substances in the earth or air provide the principle source of ions wh increase the conductivity of the lower layers of the atmosphere. Fifteen of these radioact elements, together with their half-life and disintegration constant, and the type of rays emitted each are described in a table. Two classic methods of measuring radioactivity in the atmosph are discussed: the direct or emanometry method, and the indirect or induction method. The lat is simpler but less reliable except when dealing with certain elements whose life is too short emanometer techniques. Corrections for time, saturation deficit, pressure and temperature discussed. Actual measurements of radon content of the atmosphere in various parts of the ea (1907–1942) according to different authorities, are tabulated. Relation to meteorological conditi (pressure, wind, air mass, precipitation, austausch, etc.) vertical and geographical distribution then treated. Finally, unsolved problems such as the development of automatic recording devi to substitute for isolated measurements, surveys by networks to determine simultaneous geograph (horizontal and cross section) distribution, development of an air mass classification based radioactive elements in air, determination of radioactivity of precipitation and relation to thun storm activity and survey classification and analysis of records of radioactivity in atmosphere an precipitation. (*Same item as* 4.2 11, Feb. 1953, *MAB.*) *Subject Headings:* **1. Radioactivity in atmosphere 2. Ionization 3. Austausch 4. Emanometry 5. Compendium articles.**—*M.R.*

7E–36 551.594.14:551.578.46:539

Meinke, W. Wayne (*Dept. of Chemistry, Michigan Univ., Ann Arbor*), **Observations on rad active snows at Ann Arbor, Michigan.** *Science,* 113(2941):545–546, May 11, **1951.** 4 refs. **DL** Careful chemical determinations of radioactive elements found in snow which fell before Jan. and from Jan. 31–Feb. 1, 1954, respectively (tests were made as of Feb. 4) show that ratio of r

rth atoms to Ba-Sr atoms found in the snow-pack correspond to what would be expected from omic fission such as occurred during Las Vegas, Nev., test explosions of Jan. 27–Feb. 6, 1954, d that most of the radioactivity was concentrated in top half (portion fallen Jan. 31 and Feb. 1) d the activity must have originated in explosions of Jan. 27 and or 28. Later snowfalls (Feb. and 6) show little activity. The greatest amount detected does not approach levels dangerous to alth; but does offer possibility of contamination of film packs or of low-background radioactivity periments. *Same item as* 6.5-344, May 1955, *MAB.*) *Subject Headings:* **1. Radioactivity in snow Snow radioactivity analysis 3. Atomic explosions 4. Ann Arbor, Mich.**—*M.R.*

7E–37 551.551:551.594.14

Milin, V. B., **K voprosu opredeleniia koefitsienta turbulentnogo obmena v prizemnom sloe mosfery.** [Determination of the coefficient of turbulent exchange in the layer of air near the round.] *U.S.S.R. Glavnoe Upravlenie Gidrometeorologicheskoi Sluzhby, Informatsionnyi Sbornik,* :28–36, **1951.** figs., 2 tables, 5 refs. **DLC**—The use of radioactivity measurements to determine e coefficient of turbulent exchange is suggested. The basic differential equation is:

$$\frac{\partial S}{\partial t} = A\frac{\partial^2 S}{\partial h^2} + \frac{\partial A}{\partial h}\frac{\partial S}{\partial h} - \lambda S,$$

here S = concentration of emanation in the air; t = time; h = height above the ground; λ = decay onstant of the emanation; $A = f\ h$ —coefficient of turbulent exchange. The author developed a ethod for the determination of A knowing S for the air in the soil and in the atmosphere and knowing the diffusion coefficient of the emanation in the soil. Results of measurements and calculations how a sharply expressed diurnal course of the exchange coefficient. (*Same item as* 4B–273, Feb. 953, *MAB.* *Subject Headings:* **1. Radioactive diffusion 2. Exchange coefficient 3. Diurnal urbulent exchange variations.**—*A.A.*

1952

7E–38 551.594.14:551.578.11

Abribat, Marcel; Pinoir, Robert; Pouradier, Jacques and Venet, Anne-Marie, **Sur l'existence le produits redioactifs artificiels dans les eaux de pluie de la région parisienne.** [The presence of rtificial radioactive matter in rain water in the region of Paris.] *Académie des Sciences, Paris, Comptes Rendus,* 254 (11):1161–1163, March 10, **1952.** fig. **DWB**—Measurements made with a Geiger-Müller counter at the research laboratory of Kodak-Pathé are reported. β-rays emitted by dry residue of rainwater were measured and showed abnormally high activity 8–15 days after nuclear explosions in Nevada on Oct. 22 and Nov. 19, 1951. The lack of emission of α particles proved that the residue investigated was of artificial origin which leads to the conclusion that they came from the Nevada explosions, an assumption which is supported by the agreement of dates. The radioactivity measured during the critical months is graphically illustrated. (*Same item as* 4.8–272, Aug. 1953, *MAB.*) *Subject Headings:* **1. Radioactivity in rainwater 2. Rainwater analysis 3. Radioactive rainout 4. Paris, France.**—*G.T.*

7E–39 551.594.14

Abribat, Marcel; Pouradier, Jacques and Venet, Anne-Marie, **Sur les produits radioactifs artificiels existant dans l'atmosphère de la région parisienne.** [On the artificial radioactive products present in the atmosphere in the region of Paris.] *Académie des Sciences, Paris, Comptes Rendus,* 235(2):157–159, July 16, **1952.** 3 figs., refs. **DLC**—Daily air filtering from Nov., 1951 to June, 1952 showed β-activity in Nov. and Dec., and a much stronger peak in the spring of 1952. Also measured activity in precipitation residue. A plot of activity vs. time for the three most active air samples (May 15, April 17, 1952) and the most active rain samples (Nov. 6, 1951) showed the exponent in the decay law to be -1.2 ± 0.1. *Subject Headings:* **1. Radioactivity in rainwater 2. Paris, France.**—*R. J. List.*

7E–40 551.508.79:551.579.5:551.594.14

Belcher, D. J.; Cuykendall, T. R. and Sack, H. S. (all, *Cornell University*), **Nuclear meters for measuring soil density and moisture in thin surface layers.** *U. S. Civil Aeronautics Administration. Technical Development and Evaluation Center, Technical Development Report,* No. 161, Feb. **1952.** 8 p. 6 figs., table. **DWB**—The measurement of soil density and moisture at varying depths by means of nuclear instruments was described previously in its *Technical Development Report,* No. 127. The present report describes the development of new meters that measure density and moisture of the surface layer of soil. Using the same radioactive sources and same counter tubes as used in the depth probes, but with a different geometric design, these preliminary models prove to be promising under both laboratory and field conditions. Further studies are being made to improve their operational characteristics, particularly that of sensitivity. When perfected, they can be

used advantageously for compaction control and related purposes in all types of earth constructi They are efficient, convenient and economical. It takes about fifteen minutes to take measureme and obtain the results on a complete set of density and moisture readings. *Subject Headin* **1. Radioactive soil moisture instruments 2. Soil density instruments.**—*Authors' abstract.*

7E–41 551.594

Blifford, Irving H.; Lockhart, Luther B., Jr. and Rosenstock, Herbert B. (*U. S. Naval R Lab., Wash., D. C.*), **On the natural radioactivity in the air.** *Journal of Geophysical Resea* 57(4):499–509, Dec. **1952.** 2 figs., 11 refs., 16 eqs. **DLC**—The concentrations of the various ra active decay products of radium in the air have been determined by observing the beta activ (1) of pieces of filter paper through which air has been passed, and (2) of chemically separa isotopes obtained from such filter papers. The relative amounts of long-lived and short-li products found indicate that, besides the radioactive decay of the substances, some other proc which removes radioactive particles from the air is active. The mean life of the particles va respect to this removing process is found to be about 10 days. The hypothesis that this proces the capture of the radioactive particles by rain droplets (clouds) is consistent with measureme made of the radioactive content of rainwater. On the other hand, the removal of the ionized ra active particles by the electric field of the earth leads to a much smaller effect. (*Same item* 4.8–273, Aug. 1953, *MAB.*) *Subject Heading:* **1. Radioactivity in the atmosphere.**—*Auth abstract.*

7E–42 551.594

Dawson, K. B., **Radioactive material in the atmosphere.** *British Journal of Cancer*, 6:22– **1952.** 6 tables, 10 refs. **DSG**—Summary of observations at 3 sites in London (open air and ce or raid shelter), Rothamsted and Manchester, in c/m². No consistent differences from town country in the open, but rapid variations from day to day. Underground amounts were more t 100 times greater than open but did not reach harmful level. (*Same item as* 5.3–318, March 19 *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. England.**—*C.E.P.B.*

7E–43 551.508.77:551.578.4:551.594

Doremus, John A. (*Motorola, Inc., Chic.*), **Radioactive snow gage with telemetering syste** *Eastern Snow Conference, 9th, Springfield, Mass., 1952, Proceedings*, p. 13–23, [1952?] 8 f (incl. photos) **DWB**—The technical (engineering) aspects of the radioactive snow gage are scribed and illustrated. The telemetering system, calibration (counts per minute vs. inches water in snow column), elimination of background count, magnitude of error, proposed use scintillation counter to reduce dead time and increase accuracy of count, wiring of a typical d transmitting station (automatic) and automatic repeater station, etc., are covered. The engineer group headed by the author put GERDEL's idea of a radioactive snow gage into operational fo so that data from a network of remote gaging stations could be collected at one central point use by the forecasters. One main problem has been to have the data recorded in units which directly applicable (water equivalent) rather than in counts per minute. *Subject Headings:* **1. Rad active snow gages 2. Telemetering systems.**—*M.R.*

7E–44 551.577:551.594

Garrigue, Hubert, **Recherches sur les précipitations atmosphériques a l'échelle du globe.** [I search on atmospheric precipitation on a global scale.] *Académie des Sciences, Paris, Comp Rendus*, 234(15):1571–1573, April 7, **1952.** **DWB**—In connection with observations on the reduct of radioactive pollution in the atmosphere between 1946 and 1951, the author investigated t variations in precipitation over the entire earth during this period. The world is divided into regions, viz.: 1) North America, 2) South America, 3) Europe, 4) India, 5) Japan, 6) Austral 7) South Africa and 8) Philippines, and mean monthly precipitation for 1949 is compared with t normals. An increase in mean annual precipitation is noted for 1949 and 1950. (*Same item* 4.10–200, Oct. 1953, *MAB.*) *Subject Headings:* **1. Global precipitation variations 2. Precipitat effects on radioactivity.**—*I.L.D.*

7E–45 551.594

*Garrigue, Hubert, **Sur la radioactivité anormale de l'atmosphère.** [On abnormal radioactiv of the atmosphere.] *Académie des Sciences, Paris, Comptes Rendus*, 235(23):1498–1499, Dec. **1952.** table. **DWB**—The tabulated recordings on the radioactivity of the atmosphere were ba on ground observation at 1500 m (Puy de Dôme) and flights up to 5000 m on selected days fr April 11 through July 1, 1952. This span of time permits no satisfactory conclusion to be drawn to speed of propagation and dissemination of radioactive "atomic" clouds. (*Same item as* 6.5–3 May 1955, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. Radioactive fall propagation 3. Puy de Dôme, France.**—*W.N.*

TE-46

551.594.14

Thomas, William. Radioactive fallout in the meteorological and aerological-meteorological [illegible]. [illegible] 1. Radioactivity in the atmosphere. 2. Atomic explosion effects.—I. E. P. B.

TE-47

551.594.14

Eisen, Thomas J. and [illegible]. Tracing nuclear explosions. Washington, U. S. [illegible] 1. Radioactive trace substances. 2. Radioactivity in [illegible].—I. E. P. B.

TE-48

551.594.14:551.510.42

Hinchman, Paul A. Brief discussion of the meteorological program at the National Reactor Testing Station, Idaho: with emphasis on the atmospheric diff program currently in progress. [illegible] 1. Meteorological services. 2. Radioactive effluents. 3. Diffusion [illegible]. 4. National Reactor Testing Station, Idaho. 5. Idaho.—M. A.

TE-49

551.510.42:[illegible]:551.594.14

Thomas, Paul A. and [illegible], William E. W. The climatology of stack gas effluents at the National Reactor Testing Station. Idaho Operations Office, U. S. Atomic Energy Commission. March 1962. [illegible] p. 28 figs. [illegible] tables, 5 refs. DWB—Meteorological data taken at the National Reactor Testing Station for twelve months in 1960 and 1961 are analyzed to show seasonal and annual variations affecting the dispersion of stack gases. Temperature lapse rate [illegible] annual variations of the surface effecting the dispersion of stack gases. Temperature lapse rate [illegible] and annual and two-year data. Diffusion equations are presented for the types for which the formula [illegible] 1. Stack [illegible]. 2. Radioactive effluents. 3. National Reactor Testing Station, Idaho. 4. Idaho. 5. U. S. Weather Bureau.—[illegible]

TE-50

551.594.14

[illegible] Radioactivity and Fundamental Physics. Trans. Antoniadis, Georgiana and Devons, Samuel. Radioactivity and Fundamental Physics. Trans. Antoniadis, Georgiana and Devons, Samuel. Vol. 2. [illegible] Springer [illegible] 1. [illegible] 2. [illegible] 3. [illegible] 4. [illegible] 5. [illegible] 6. References to the source of such information. Source Elements [illegible] Radioactivity in the atmosphere.—I. E.

TE-51

551.594.14

[illegible] Sur la mesure de la radioactivité de l'air atmosphérique à Paris et [illegible] atmosphère. [illegible] 1. [illegible] 2. [illegible] 3. [illegible] 4. [illegible] 5. [illegible] 6. [illegible] 7. [illegible] 8. [illegible] 9. [illegible] 10. [illegible] 11. [illegible] 12. [illegible] 13. [illegible] 14. [illegible] 15. [illegible] 16. [illegible] 17. [illegible] 18. [illegible] 19. [illegible] 20. [illegible]

on a gammameter varies as a function of (1) the radioactivity of the soil, (2) the intensity of cosm radiation and (3) charge of the radioactive elements contained in the air surrounding the instrume By eliminating factors (1) and (2) the radioactivity of atmospheric air can be measured. Expe mental evidence presented is found to justify this method. Probable error involved is evaluat *Subject Headings:* **1. Radioactivity in the atmosphere 2. Gammameters.**—*G.T.*

7E–52 551.594.

Lossnitzer, H., **Über meteorologisch bedingte Schwankungen der radioaktiven Umgebung strahlung.** [Meteorologically conditioned variations in local radioactive radiation.] *Bad Landeswetterdienst, Jahresbericht mit Abhandlungen,* **1951/1952.** p. 154. fig. **DWB**—A sh note showing that the diurnal means of radioactivity observed over $2\frac{1}{2}$ months show variatio which can be attributed to meteorological factors (snow cover, precipitation, etc.). (*Same item* 6.5–343, May 1955, *MAB.*) *Subject Headings:* **1. Meteorological effects on radioactivity 2. Radi activity in the atmosphere.**—*A.A.*

7E–53 551.594.

Luntz, Jerome D., **Radiation safety for a weapons test.** *Nucleonics,* N. Y., 10(5):10–1 May **1952.** 11 figs. **DLC**—Describes monitoring in areas within 200 mi of test site, in ring fro 200–500 mi, and nationwide monitoring with gummed paper and air filters during the Nevada tes in the Spring of 1952. States that for an air burst of one nominal bomb, 0.02 per cent of the fissi products were left on the ground within a radius of 2000 ft of ground zero. *Subject Heading* **1. Radiation safety measures 2. Radioactive fallout networks.**—*R. J. List.*

7E–54 551.594.

Rose, D. C. and Katzman, J., **Radioactive deposits at Ottawa after the atomic explosions January and February 1951.** *Canadian Journal of Physics,* 30(2):111–116, March **1952.** 4 figs 5 refs. **DWB**—At about 1000 G.M.T. on Jan. 29 and about 0800 G.M.T. on Feb. 7, 1951 the fa of a considerable amount of radioactive matter was recorded by various arrangements of Geige Müller counters which were in continuous operation on the roof of the cosmic ray observatory of th National Research Council of Canada at Ottawa. Light snow was falling on both occasions (chan ing into rain on Feb. 7), but it is uncertain whether this had any bearing on the deposit of radioactiv material. The material was found to be dust distributed over the snow cover. The quantity wa roughly estimated to be of the order of one microgram radium equivalent per square meter. Mea urement of decay rate was made on samples of melted snow and indicated that the radioactivit recorded on the above dates was probably due to products of fission originating in atomic explosion in Nevada on Jan. 27, and between Feb. 2 and Feb. 4, respectively. Decay curves are presente and the arrangement of the counter trays shown in a diagram. (*Same item as* 5.2–303, Feb. 1954 *MAB.*) *Subject Headings:* **1. Radioactive fallout data 2. Ottawa, Canada.**—*G.T.*

7E–55 551.551:551.594.1

Schellenberger, Günther, **Zur Verteilung radioaktiver Substanzen in einem turbulenten Wind feld.** [On the distribution of radioactive substances in a turbulent wind field.] *Zeitschrift fu Meteorologie,* 6(8):225–231, Aug. **1952.** 2 figs., 8 refs., eqs. **DWB**—The diffusion of an emanatio gas in the tubulent atmosphere from a linear or point source is studied, using Ertel's differenti equation of exchange and considering the decay constant and concentration of the emanation. Th solution can be used in unsteady cases starting with 100 m from the source. As a steady case th vertical distribution of emanation is derived theoretically as a function of the exchange coefficient Assuming $\eta = 50$ [g cm^{-1} sec^{-1}] the height of half value (h) is found for Ra (A, B, C) $h \times 1100$ m Ra (D, E, F) practically no vertical decrease in the troposphere, emanations of Th and Ac $h \approx 1$ and 4 m, Th (B, C . . .) $h \approx 300$ m, Ac (B, C . . .) $h \approx 80$ m. (*Same item as* 4B–321, Feb. 1953 *MAB.*) *Subject Headings:* **1. Radioactive diffusion 2. Turbulence theory.**—*A.A.*

7E–56 551.594.14:551.515.

U. S. Office of Naval Research, London, **Atmospheric radioactivity following nuclear explosion** Its *Technical Report ONRL-66-52,* July 3, **1952.** [5 p.] 3 figs. **DWB**—Brief note on measuremen of β-activity of rain water, made by employees of Kodak-Pathé at Paris, from Nov. 1951 throug Feb. 1952, following nuclear explosions in Nevada on Oct. 22, Nov. 5 and Nov. 19, and on activity atmospheric dust observed during the same period. Radioactivity curves of rainwater and dust a presented for the four months and show peak values about ten days after nuclear explosions an amounts reaching 20 times normal during Nov. and Dec. A map indicating the paths of air mass at 700 and 500 mb levels, as traced back from Paris to Nevada by M. Genève of the Météorolog Nationale, is reproduced. The French Meteorological Office is setting up a network in Norwa France, Morocco and French West Africa for further observations of radioactivity. (*Same item*

242, June 1953, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. Radioactive ut networks 3. Air mass movements. I. Hyde, W. Lewis.**—*G.T.*

7E–57 551.594.14:551.501.9

Weiss, Max M., **The area survey manual of Brookhaven National Laboratory: area radiation ection instrumentation, maintenance and results.** *U. S. Brookhaven National Laboratory, on, N. Y., BNL* 167, Jan. 1, **1952.** 147 p. figs., tables, refs., eqs. **DLC**—Instrumentation the area radiation monitoring system of Brookhaven National Lab. is described in detail; its ration and maintenance is discussed. The units are: (1) photographic assembly, (2) Geiger-ller counter assembly, (3) battery-operated ratemeter assembly, (4) dynamic condenser elec-meter—ionization chamber, (5) continuous dust monitor for airborne radioactive dust, (6) in-rating ionization chambers, and other installations. The report includes an analysis of measure-nts of background radiation and its variations due to (a) natural causes, (b) reactor operations (c) atomic explosions. *Subject Headings:* **1. Radioactive fallout networks 2. Radioactivity asurement techniques 3. Radioactive effluents 4. Instrument manuals 5. Brookhaven tional Lab., Upton, N. Y. I. U. S. Atomic Energy Commission.**—*G.T.*

7E–58 551.508.91:546.432

Wilkening, M. H., **A monitor for natural atmospheric radioactivity.** *Nucleonics,* New York, 6):36–39, June **1952.** 4 figs., table, refs. **DLC.** Also issued as New Mexico Institute of Mining l Technology, Contract N7ONR-405, Task 1, Project NR-082-013, Technical Report, No. 6-NR, 52. 4 figs., table, 5 refs. **DWB**—The apparatus described in this paper is used at the New xico Institute of Mining and Technology. It records time variations of radon and thoron ducts deposited by an electrostatic precipitator on a moving tape. The instrument is used, particular, for studies of the effect of meteorological phenomena on the natural radioactivity the atmosphere. Alpha activities from 12 to over 400 cpm have been observed and variations up to a factor of 10 occurred in the course of a day. Two sample records (one showing effect of ong wind on α-activity) and graphs showing average diurnal variations of α and β counts for 14 ys are presented. *Subject Headings:* **1. Electrostatic precipitators 2. Radon content of atmosphere Aerosols 4. Radioactivity in the atmosphere 5. Socorro, New Mexico.**—*G.T.*

1953

7E–59 551.594.14

Abribat, Marcel and Pouradier, Jacques, **Évolution de la teneur en radioéléments artificiels de tmosphère de la région parisienne.** [Evolution of the artificial radioelement content of the mosphere in the Paris region.] *Académie des Sciences, Paris, Comptes Rendus,* 237 (20):1233–1235, ov. 16, **1953.** 2 figs., 2 refs. **DLC**—Daily air filter measurements in Paris from Jan. through t., 1953 clearly show increases in β-activity during the spring and fall, corresponding to the vada and Russian tests, respectively. Spring peak about three times peak from Russian tests, activity in rainfall also shows marked increase in spring, lack of precipitation in Sept. resulted in evidence of the Russian tests in rainfall. *Subject Headings:* **1. Radioactive fallout data 2. Paris, ance.**—*R. J. List.*

7E–60 551.594.14:551.578.11 (767)

Damon, P. E. and Kuroda, P. K., **On the artificial radioactivity of rainfall.** *Nucleonics,* (12):59, Dec. **1953. DLC**—On June 5, 1953, rain which fell in Fayetteville, Arkansas was found contain fission product activity. Radiochemical analyses of several elements. Analysis of inwater from June 5 to June 23 showed an apparent correlation between artificial radioactivity d air mass. High activity associated with polar continental air, low with tropical maritime. The tal fission activity falling in the two-month period in the vicinity of Fayetteville was in excess 10^{-8} curie per sq m. *Subject Headings:* **1. Radioactive fallout data 2. Fayetteville, Arkansas.** -*R. J. List.*

7E–61 551.594.14:551.501.9

Eisenbud, Merril and Harley, John H. (*U. S. Atomic Energy Comm., N. Y.*), **Radioactive dust om nuclear detonations.** *Science,* 117 (3033):141–147, Feb. 13, **1953.** 3 tables, fig., 8 refs. **DWB** -Results obtained in measuring radioactivity in dust particles dispersed by nuclear explosions are ported. The measurements are being made by a monitoring system set up by the Atomic Energy ommission and comprising 121 monitoring stations located at Weather Bureau stations throughout e U. S., as well as mobile teams operating in the area 200–500 mi from the atomic test site. After scussing the data obtained so far, the authors conclude that "the long-lived components of the dioactivity are of a low order compared with the natural radioactivity of the earth's surface and tmosphere." (*Same item as* 4.10-90, Oct. 1953, *MAB.*) *Subject Heading:* **1. Radioactive fallout etworks.**—*G.T.*

7E–62 551.594

Fafarman, A. and Shamos, M. H., **Effect of fall-out from atomic blast on background count rate.** *Nucleonics*, N. Y., 11(6):80–81, June **1953.** 2 figs. **DLC**—Background measurements w a sodium-iodide scintillation detector at New York Univ. show normal variation of ±5%. 1030, March 19, 1953, the rate increased to 3850 cpm, 600% above background. A heavy preceded the measurement and presumably contained debris from the March 17 Nevada t Removal of rain water dropped rate to 1470 cpm. Curves of energy versus count before and a fallout are given. *Subject Headings:* **1. Radioactive rainout 2. New York, N. Y.**—*R. J. List.*

7E–63 551.510.42:551.578.41 551.594.14:551.578

Garrigue, Hubert, **Observations sur les impuretés contenues dans l'air libre.** [Observat of impurities in the free air.] *Académie des Sciences, Paris, Comptes Rendus*, 236(24):2309–2 June 15, **1953.** refs. **DWB**—Measurements of atmospheric impurities are reported from Puy de Dôme peak (1450 m) and various points within 500 m below the peak (Jan.–Feb. 19 The measurements were made by analyzing residual matter obtained from evaporated snow samp 10^4–10^6 radioactive atoms (probably fission products) and 0.01 -0.1 g of dust and soot were identi per liter of precipitation. The synoptic situations prevailing during the sampling are speci The dust and soot are attributed to local factors, while the radioactive matter is thought to b very remote origin (in respect to both space and time), which would mean that it affects large ar (*Same item as* 5.7–72, July 1954, *MAB.*) *Subject Headings:* **1. Radioactivity in snow 2. Sn radioactivity analysis 3. Puy de Dôme, France.**—*G.T.*

7E–64 551.594

Garrigue, Hubert, **Prospection de la radioactivité de l'air.** [Observation of the radioactiv of the air.] *Académie des Sciences, Paris, Comptes Rendus*, 237(15):802–803, Oct. 12, **1953. DL** Aircraft sampling at about 3000 m from May to Sept., 1953, indicated no evidence of atomic de or only traces on most occasions. During flights on Aug. 15 and Aug. 28, material with an appar half-life of 25 hrs was found. The concentration on the 15th was 0.1×10^{-18} c/cm³ radon equivale *Subject Headings:* **1. Radioactivity in the atmosphere 2. Airplane sampling of radioactivity** *R. J. List.*

7E–65 551.594.14:551.578

Garrigue, Hubert, **Sur la radioactivité de l'atmosphère d'origine atomique.** [On atmosph radioactivity of atomic origin.] *Académie des Sciences, Paris, Comptes Rendus*, 237(20):1232–12 Nov. 16, **1953.** refs. Also: Same title, *Ibid.*, 240(2):178–180, Jan. 10, **1955.** 5 refs. **DL** (1) Aircraft measurements in Oct. 1953 show at most traces of radioactivity. Snow sample (7 on Nov. 3, 1953 yielded 0.1×10^{-18} c/cm³ (radon equivalent) in the residue, about 20% above ba ground. Only β-activity was found.—(2) Aircraft sampling over France in the summer of 1 showed no positive results. A flight on Oct. 13, 1954 at 3000 m showed a trace of long-lived partic Analysis of solid residue from 7 kg of precipitation which fell on Dec. 5 and 6, 1954, showed β-activ 14% above background from long-lived particles. *Subject Headings:* **1. Radioactivity in the mosphere 2. Radioactivity in snow 3. Airplane sampling of radioactivity 4. France.**—*R. J. L*

7E–66 551.501:551.594.14:546.

Haxel, Otto, **Eine einfache Methode zur Messung des Gehaltes der Luft an radioaktiv Substanzen.** [A simple method of measuring the content of radioactive substances in the a *Zeitschrift für angewandte Physik*, 5(7):241–242, July **1953.** fig., 3 refs. **DLC**—Filter pap containing asbestos or amber have the property of retaining radioactive emanations. If a measu volume of air is passed through such a filter and the radioactivity of the paper measured, the rad activity of the air is given. Its nature can be determined from the decay curve. (*Same item* 5.2–24, Feb. 1954, *MAB.*) *Subject Heading:* **1. Radioactivity measurement techniques.**—*C.E.P*

7E–67 551.594.14:

Haxel, Otto and Schumann, G., **Über die radioaktive Verseuchung der Atmosphäre.** [the radioactive contamination of the atmosphere.] *Naturwissenschaften*, 40(17):458–459, Se **1953.** 2 figs., refs. **DWB**—Continuous records of radioactivity at Königsstuhl near Heidelb since March 1953 show long-lived activity which is attributed to end products of atom bomb plosions. The Las Vegas explosion of May 8 appeared as a sudden increase of activity on May to 2.5×10^{-12} c/m³. (*Same item as* 5.2–302, Feb. 1954, *MAB.*) *Subject Headings:* **1. Radioacti in the atmosphere 2. Atomic explosions 3. Königsstuhl, Germany.**—*C.E.P.B.*

7E–68 551.594.14:551.513.2:551.557:

†Herbst, W.; Neuwirth, R. and Philipp, K., **Betrachtungen über die Eignung radioakti atomtechnischer Aerosole als Markierungsmittel bei Arbeiten auf dem Gebiete der meteorologisch**

Strömungsforschung. [Remarks on the suitability of artificial atomic radioactive aerosols as markers for work in atmospheric current investigations.] *Naturwissenschaften*, 41(7):156–160, April 1, **1954.** 3 figs., 17 refs. **DLC**—Radioactive aerosols from the atom bomb explosion in Nevada on June 5, 1952, were brought down by rain at Helena, 800 km distant, on June 6–15. At Wittental, Germany (47°59′N, 7°57′E), twice normal radiation was recorded on June 18–19. During intervening days there was a steady jet stream. Beginning June 6 at Helena, tracks on 500 mb charts ran 18,000 km across Atlantic and round N. Scandinavia, reaching Germany from the east on June 18. Tracks leaving Helena on June 8–13 did not reach S.W. Germany but a direct track from Helena on June 14 gave a second radiation peak at Wittental on 21st. The occurrences at Wittental are attributed to descent of air at a divergence line on the margin of the jet stream. Technique of measuring residual atomic products is discussed. (*Same item as* 5.8–276, Aug. 1954, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. Jet stream 3. Atomic explosions.** —*C.E.P.B.*

7E–69 551.594.14:551.557

Herbst, Walter and Philipp, K., **Wanderweg eines atomtechnischen Aerosols.** [Track of an atomic aerosol.] *Naturwissenschaften*, 40(2):54, Jan. 2, **1953.** 3 refs. **DWB**—Measurements with Geiger-Müller counter at Wittental near Freiburg showed a strong increase of "null" effect to 2–3 times its normal level on Oct. 18–20, 1951. This was traced back by weather charts to the radioactive cloud from an atom bomb, which passed Helena, Mont. on Oct. 6. (*Same item as* 4.8–275, Aug. 1953, *MAB.*) *Subject Headings:* **1. Atomic explosions 2. Radioactivity in the atmosphere 3. Upper air winds 4. Freiburg, Germany.**—*C.E.P.B.*

7E–70 551.594.14

Hess, Victor F. (*Fordham Univ., N. Y.*), **On the ionization produced by gamma radiation from the ground and from the atmosphere.** *Journal of Geophysical Research*, 58(1):67–72, March **1953.** table, 5 refs., 4 eqs. **DWB**—Two new methods for quick determination of the ionization produced by the gamma rays from the radioactive substances in the ground are discussed. The first ("absorption method") utilizes partial screening of a portable ionization meter with a lead shield of one centimeter from the bottom and from the sides, and empirical determination of its absorbing power. This method was tried out in field experiments and its results agree very well with the results obtained with the conventional method (alternative measurements over soil and over water). The second method ("well method") consists in placing a cylindrical ionization chamber inside an iron housing with a wall 10 cm thick, but open at the top and on the bottom. The chamber is used in two positions inside this "iron well" and from the difference of ionization observed at these two positions the total value of the terrestrial gamma radiation can be derived. Both methods can also be used for determining the gamma radiation coming from the atmosphere ("air radiation"); however, the smallness of this effect makes it difficult to get reliable results. Discrepancies arising in this case are discussed. (*Same item as* 5.1–309, Jan. 1954, *MAB.*) *Subject Heading:* **1. Radioactive emanations.**—*Author's abstract.*

7E–71 551.594.14

Hess, Victor F., **Radon, thoron, and their decay products in the atmosphere.** *Journal of Atmospheric and Terrestrial Physics*, 3(3):172–177, April **1953.** 2 tables, 16 refs. **DWB**—Ionization due to alpha rays measured at Fordham University, New York, by HESS and VANCOUR (1950) is recalculated to eliminate errors. Radon+decay products gave 53.8×10^{-18} c/cm³ or 0.70 I (ions produced per cc per sec), thorium products 41.0×10^{-18} curie or 0.53 I. (*Same item as* 4.8–276, Aug. 1953, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. Ionization.**—*C.E.P.B.*

7E–72 551.506:539

Holzman, Benjamin G. (*Kirtland Air Force Base, New Mexico*), **Have atom bomb tests fouled up the weather?** *Look*, Des Moines, Iowa, 17(16):32–33, Aug. 11, **1953.** diagr. Biographical note p. 32. **DWB**—The author, who has studied the meteorological effects and attending conditions for a number of atom bomb tests, shows that the atomic debris from the June 4, 1953 test in Nevada was far out to sea in the Atlantic when the Michigan and Worcester, Mass. tornadoes occurred, and states unequivocally that the explosion of an A-bomb does not affect the weather except locally through convective currents attending large scale fires started by the bomb (as at Hiroshima) or by affecting local winds temporarily. The energy and the debris from such an explosion are insignificant compared to the energy of a thunderstorm or hurricane, or condensation nuclei from sea salt or dust which are always present. (*Same item as* 5.6 42, June 1954, *MAB.*) *Subject Headings:* **1. Atomic explosion effects on weather 2. Tornadoes (June 1953).**—*M.R.*

7E–73 551.594.14

Moraschinelli, E. (*Pavia Univ.*), **Autoradiografia dell'aerosol atmosferico.** [Autoradiography of atmospheric aerosols.] *Il Nuovo Cimento*, Bologna, 10(9):1341–1342, Sept. **1, 1953.** refs.

DLC—Radioactive matter, produced by disintegration of radium and thorium emanation, can become "anchored" to aerosols. In this paper an apparatus for determining radioactive transitions in a film of deposited atmospheric solid particles is described. The principal problem investigated with the apparatus was whether successive elements of the two series of radium-uranium and thorium are fully present on the aerosols. After discussing the radioactive transitions identified, the author concludes that there is no radioactive equilibrium on the aerosols. The process of "anchorage" necessitates a certain time; short-lived elements are, therefore, liable to undergo a transformation before being anchored to an aerosol. (*Same item as* 5.9–313, Sept. 1954, *MAB.*) *Subject Heading:* **1. Radioactive aerosols.**—*G.T.*

7E–74 **551.594.14**

Moraschinelli, E., **Misura della radioattivita atmosferica con emulsioni nucleari.** [Measurement of the radioactivity of the atmosphere by means of nuclear emulsions.] *Annali di Geofisica*, 6(4):561–567, Oct. **1953.** 11 refs. Italian and English summaries p. 567. **DLC**—A method of measuring atmospheric radioactivity by the employment of nuclear emulsions is described. The radioactive components are separated from the air by electrostatic separation into an electrode plate, following which, the plate is placed on the sensitive emulsion in order to obtain a registration of the emitted alpha particles. From a microscopic examination of the emulsion one determines the relative amount of atmospheric radioactivity and it is also possible to discriminate between the elements of the thorium family and those of the uranium-radium family. (*Same item as* 6.1–345, Jan. 1955, *MAB.*) *Subject Headings:* **1. Radioactivity measurement techniques 2. Nuclear emulsions.**—*Author's abstract.*

7E–75 **551.594.14:551.521.64**

Pfotzer, G., **Zur Berechnung der Gleichgewichtsmenge β-aktiven Kohlenstoffes in der Atmosphäre aus Daten über Ultrastrahlungsneutronen.** [On the calculation of the equilibrium amount of β-active carbon from data on cosmic-ray neutrons.] *Zeitschrift für Naturforschung*, 7a(2):147–149, Feb. **1952.** 9 eqs., refs. **DLC**—Calculations can be made using measurements of (a) the counting rate of unscreened counters; (b) (less accurately) the change in counting rate on inserting a Cd absorber (Cd-difference). The production rate of C^{14} is 1.9–2.5 atoms sec^{-1} cm^{-2} of air, giving an equilibrium amount of $1.1–1.5 \times 10^{-11}$ g cm^{-2} earth's surface. The corresponding C^{14} activity in organic biological substances is 13.5–18 β-disintegrations min^{-1} g^{-1} C, in agreement with the measurements of Anderson and Libby. *Subject Headings:* **1. Cosmic ray effects 2. Radiocarbon in the atmosphere.**—*Physics Abstracts, No. 5998, 1952.*

7E–76 **551.5:662.2:539.1**

Reichelderfer, Francis W., **What's wrong with the weather?** *U. S. News and World Report*, Wash., D. C., 34(26):50–54, 59–66, June 26, **1953.** port., diagrs. **DLC**—An extensive interview between Reichelderfer, chief of the U. S. Weather Bureau and the editors of the U. S. News and World Report wherein the author gives the latest official information or opinions on the possibility of atomic explosions influencing the weather, on radiation effects of atomic explosions, etc. It is concluded that the energy of an atom bomb is too small to influence the large-scale weather processes or even hurricanes. (*Same item as* 5.1–13, Jan. 1954, *MAB.*) *Subject Heading:* **1. Atomic explosion effects on weather.**—*M.R.*

7E–77 **551.594.14:551.577:539**

Santomauro, L. and Cigna, A., **Prime misure sulla radioattività delle precipitazioni atmosferiche.** [First measurement of radioactivity of precipitation.] *Annali di Geofisica*, Rome, 6(3):381–387, July **1953.** 2 figs., 16 refs. English summary p. 387. **MH-BH**—During Feb. 1951 to Nov. 1952, the radioactivity of atmospheric precipitation was tested with a G-M counter. This activity was not constant: indeed it became greater after atomic experiments at Las Vegas, Eniwetok and Montebello Island. Therefore these facts are probably related. The activity increased about 8 days after Las Vegas experiments, two weeks after Eniwetok experiments and about three weeks after Montebello Island explosions. Gamma and beta rays of the precipitation have been measured with G-M counter and the background of cosmic radiation was considered in drawing the diagrams. (*Same item as* 5.8–277, Aug. 1954, *MAB.*) *Subject Headings:* **1. Radioactivity in precipitation 2. Atomic explosions 3. Italy.**—*Authors' abstract.*

7E–78 **551.594.14**

Sittkus, A.; Ganz, D. and Remy, E., **Untersuchungen über die radioaktive Umgebungsstrahlung und ihre Wirkung.** [Investigations into radioactive radiation from surroundings and its effect.] *Zeitschrift für Naturforschung*, 8a(5):317–322, May **1953.** 4 figs., table, 11 refs. **DLC**—An investigation of influence of effect of nearby radioactive radiation on measurements with ionization chambers and simple counters showed that variations of ground and air radiation could change zero of unprotected apparatus by 100%, and behind 50 g/cm^2 shield by 10%. Effect was due mainly

to new snow and rain water. (*Same item as* 4.10–260, Oct. 1953, *MAB.*) *Subject Heading:* **1. Radioactivity in the atmosphere.**—*C.E.P.B.*

7E–79 551.594.14:551.579

Thomas, Harold A., Jr.; Kleinschmidt, R. Stevens; Parker, Frank L. et al., **Radioactive fallout in Massachusetts surface waters.** *American Water Works Association, Journal,* 45(6):562–568, June **1953.** 2 figs., 6 tables, 3 refs., 4 eqs. **DLC**—Beginning on April 26, 1952, a series of weekly samples of water from various streams and reservoirs in Massachusetts and rain samples were tested for gross beta-gamma activity. Highest rain water activity, at Cambridge, Mass., on June 5, 1952, was 6899 cpm/liter, with a counter efficiency of 10–15%. A settling test on a rain water sample indicated 53.6% of the activity was in the lowest 25% of a glass cylinder in which the water had been allowed to settle for 48 hrs. Decay curves of several samples are given. *Subject Headings:* **1. Radioactivity in surface waters 2. Massachusetts. I. Bell, Carlos G., Jr.**—*R. J. List.*

7E–80 551.594.14

*Tsivoglou, E. C.; Ayer, H. E. and Holaday, D. A., **Occurrence of non-equilibrium atmospheric mixtures of radon and its daughters.** *Nucleonics,* New York, 11(9):40–45, Sept. **1953.** 3 figs., 7 tables, 4 refs., 12 eqs. **DLC**—Describes method for laboratory field analysis of emission and decay properties of radon and its daughter products (RaA, RaB and RaC). Results obtained in a closed radon box and in two uranium mines under different conditions of ventilation are presented. The data were collected for the purpose of arriving at a more accurate evaluation of the effectiveness of ventilation in protecting workers in uranium mines. *Subject Headings:* **1. Radioactivity measurement techniques 2. Uranium mines.**—*G.T.*

7E–81 551.594.14:551.501.9

U. S. Atomic Energy Commission, **Thirteenth Semiannual Report.** Washington, D. C., Government Printing Office, Jan. **1953.** 210 p. figs., photos. **DLC**—Pt. 3 of this report (p. 77–125) deals with "Public safety in continental weapons tests." Effects of atomic explosions, the influence of various meteorological factors upon such effects, and pretest weather forecasts are discussed. The air sampling and radiation monitoring system consisting of fixed, mobile and airborne units around the test site and a national network of stations located at U. S. Weather Bureau Stations is described; instruments used and general results are indicated. It is found "that the highest levels of radioactivity released by fall-out of particles are well below the very conservative standards fixing the amounts of radiation that can be received externally or internally by the human body without harming the present or later generations." *Subject Headings:* **1. Radioactive fallout networks 2. Atomic explosion effects.**—*G.T.*

7E–82 551.594.14:551.577

U. S. Atomic Energy Commission, **Fourteenth Semiannual Report.** Wash., D. C., Govt. Print. Off., July **1953.** 98 p. figs., tables. **DLC**—Radioactivity was reported in snow in the northeastern United States during the Nevada tests of Jan. and Feb., 1951. Snow and rain samples were collected on Feb. 2 and 3 and again on Feb. 6–9. Activity in the filtrate and residue was measured, the highest total activity found was 25,300 d/m/l, corrected to Feb. 2, 1951, at Hannibal, New York, in a sample collected on Feb. 3. *Subject Headings:* **1. Radioactivity in precipitation 2. Hannibal, N. Y.**—*R. J. List.*

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7E–83 551.510.41:551.594.14

Anderson, W.; Mayneord, W. V. and Turner, R. C., **The radon content of the atmosphere.** *Nature,* London, 174(4427):424–426, Sept. 4, **1954.** fig., 13 refs. **DWB**—Comparative measures of radon by filter paper and ion chamber showed that the latter gave values 10–100 times the former. Large values in London smog (8×10^{-13} c/l by filter paper) suggest radon is derived from coal and prevented by solid matter from dilution. Measurements of coal and coal ash show $0.05–0.3\times10^{-12}$ gm radium per gm coal, 70–80% of which is liberated by burning. Coal gas contains 0.5×10^{-12} c/l. Fraction of atmospheric radon originating from coal cannot yet be assessed. (*Same item as* 6.1–113, Jan. 1955, *MAB.*) *Subject Heading:* **1. Radon content of atmosphere.**—*C.E.P.B.*

7E–84 551.594.14:551.510.42:551.578.11

*Chatterjee, Santimay; Patro, A. P.; Basu, Binayak; Bhattacharyya, R. L. and Hosain, Fazie, (*Inst. of Nuclear Physics, Calcutta*), **Presence of radioactive dusts over Calcutta.** *Science and Culture,* Calcutta, 19(11):570–571, May **1954.** table, 2 refs. Also their: **Measurements on radioactive dusts over Calcutta.** *Ibid.,* 20(8):399–401, Feb. **1955.** table, 5 refs. **DWB**—Following the nuclear explosions in the Pacific on April 4, 1954, tests were made at Calcutta to detect possible α, β or γ radioactive particles settling from the atmosphere. No rain occurred until April 29.

Samples of rainwater and dust (1000 cc) gave definite indication of β activity (120 ± 10 counts/mi gram). Dust collected from greasy parts of airplanes arriving daily at Dum Dum Airport fro Ganhati and on Sunday from Singapore from April 14–22 showed no α or γ activity, but consiste β activity ranging from 5.8 to 121 counts/min/gram. The highest value was on April 11 on a pla flying to Djakarta and back at 12,000 ft. None of these rates are dangerous but they do indica transport and detection of activity 5000 mi from source. In the second article the authors repo that radioactivity was detected in rainwater collected at Calcutta between April 29, 1954 and Ju 5, 1954, although no thermonuclear explosions were announced in the press. The alpha and gamm activity was not found to be significant, but β activity as shown in following table, shows a defini increase after May 15, indicating an explosion around May 11, though location could not be d termined.

Radioactivity of the Rainwater

Rainwater collected on	Radio-activity tested on	Ratio to background	Counts/litre/min
29–4–54	29–4–54	2.5	240 ± 21
15–5–54	18–5–54	9	320 ± 52
20–5–54	25–5–54	7	1562 ± 35
22–5–54	28–5–54	7	1452 ± 46
1–6–54	7–6–54	2.5	200 ± 13
4–6–54	7–6–54	2.8	1043 ± 60
5–7–54	12–6–54	1.2	very small
S7[1] Dust collected from a plane coming from Djakarta on 11–4–54		4	121 ± 5 per gm per min

Amounts in rainwater are too small to harm plant or animal life in India. Analysis of indicate half-lives gives clue to possible Ce^{141} content. (*Same item as* 6.5–339, May 1955, *MAB.*) *Subje Headings:* **1. Radioactive fallout 2. Radioactivity in rainwater 3. Atomic explosions 4. Calcutta India.**—*M.R.*

7E–85 551.594.1

Clark, Herbert M., **The occurrence of an unusually high-level radioactive rainout in the are of Troy, N. Y.,** *Science*, 119(3097):619–622, May 7, **1954.** 4 figs., 5 tables, 7 refs. **DLC**—Thirty six hours after the Nevada test of April 25, 1953, an unusually heavy and violent thunderstorr brought relatively large amounts of debris to the ground in the Troy, New York area. Monito readings of several mr/hr (1 in. above ground) one day after arrival were found at some location and a hot spot of 120 mr/hr 2.1 days after arrival was found near a drain spout. Accumulate 10-week gamma dose, 55 mr. A sample of rain from a puddle gave $270\mu\mu$ c/ml at time of sampling 0.7 days after arrival. A sample of a leaf 3.14 cm^2 in area gave 3.9×10^6 d/m, corrected to arrival time, a similar paper sample, 13.5×10^6 d/m. Values of the exponent in the decay law varied from 1.26 to 1.52. *Subject Headings:* **1. Radioactive rainout 2. Troy, N. Y.**—*R. J. List.*

7E–86 551.594.14:551.578.1

*Damon, Paul E. and Kuroda, P. K. (*both, Dept. of Physics, Univ. of Arkansas, Fayetteville*) **On the natural radioactivity of rainfall.** *American Geophysical Union, Transactions*, 35(2):208–216 April **1954.** 4 figs., 4 tables, refs. **DLC**—Measurements by the authors of the natural radioactivity of rainwater are reported. The radioactivity varied from one to 60 millimicrocuries per liter o rainwater and was due primarily to RaB+C. The activities due to ThB were less than 10^{-10} an 10^{-11} c/l each, respectively. RaA is present in rainwater at the time it reaches the earth's surface The mechanism for the accumulation of decay products in rainwater is discussed. The total activity (per unit area and time) increases toward the limiting value determined by the supply of RaA from Rn. An average atmospheric Rn concentration within the cloud system of approximately 0.2×10^{-13} c/l is sufficient to supply the rainwater with the observed radioactivity. The natura radioactivity of the atmosphere can be used as a tracer to study meteorological phenomena. (*Sam item as* 5.9–312, Sept. 1954, *MAB.*) *Subject Headings:* **1. Radioactivity in rainwater 2. Rainwate analysis.**—*Authors' abstract.*

7E–87 551.594.1

Fitzgerald, J. J.; Hurwitz, H., Jr. and Tonks, L., **Methods for evaluating radiation hazard from a nuclear incident.** *U. S. Atomic Energy Commission, Report No. KAPL*-1045, March 26 **1954.** 52 p. diagrs., eqs. **DLC**—Mathematical formulas are developed for evaluating hazar resulting from the dispersion of radioactivity in air, water and soil. The values expressed are

(1) dispersion of fission products in the cloud, (2) radius of cloud at origin of incident and (3) at various distances from the origin, (4) height to which the cloud will rise, (5) external and (6) internal beta and gamma dose received at various distances from origin, (7) dose from fall-out and rain-out from the fission-products cloud and (8) hazards from the contamination of water systems. *Subject Headings:* **1. Radioactive diffusion 2. Radiation hazards. I. General Electric Company. Knolls Atomic Power Laboratory.**—*G.T.*

7E–88 551.594.14:551.510.42:662:539.1

Gabites, J. F. (*Met. Off., Wellington, N. Z.*). **Drift of radioactive dust from the British nuclear bomb tests in October 1953.** *New Zealand. Meteorological Office, Meteorological Office Note*, No. 10, **1954.** [6 p.] 4 figs., 7 refs. **DWB.** Also in: *New Zealand Journal of Science and Technology, Sec. B*, 36(2):160–165, Sept. **1954. DLC**—Radioactive dust detected at Wellington, N. Z., just 30 hrs and again 38 to 54 hrs after the Woomera, S. Australia, (Oct. 1953) atomic test explosion, could not have been carried by direct air trajectories but must have followed isentropic surfaces starting at >20,000 ft, and have fallen out over New Zealand at a rate much faster than theoretically possible. The calculations and charts showing trajectories are included. Vertical cross section shows possible diffusion pattern from 3200 isentropic surface over Woomera to the surface at Wellington. How the dust got to the 320° isotherm when the cloud top was observed at 10,000 ft over Woomera, and how the first wave of dust got to N. Z. in 30 hrs is still a mystery. (*Same item as* 6.8–339, Aug. 1955, *MAB.*) *Subject Headings:* **1. Radioactive fallout 2. Isentropic dust trajectories 3. Woomera, Australia 4. Wellington, New Zealand.**—*M.R.*

7E–89 551.594.14:551.578.41

Garrigue, Hubert, **Recherches sur la radioactivité de l'atmosphère.** [Investigation of the radioactivity in the atmosphere.] *Académie des Sciences, Paris, Comptes Rendus*, 238(21):2074–2075, May 24, **1954.** ref. **DWB**—Systematic sampling of air at medium flying levels by a new apparatus installed on the S.A.L.S. flying laboratory, was begun on April 11, 1954. On April 24 at 2800 m (9500 ft) over France traces of radioactive dust were obtained over a long period. The synoptic condition (Greenland anticyclone following an Atlantic cyclone and abundant snowfall in mountains) led to the expectation of radioactivity in the snow obtained at Puy de Dôme (1465 m) but the radioactivity over 10 days was only 1/10 the maximum thus far observed in this manner. Unanalyzed samples obtained from lighter snowfall may give different results. (*Same item as* 6.5–341, May 1955, *MAB.*) *Subject Headings:* **1. Airplane sampling of radioactivity 2. Radioactivity in snow 3. Air sampling and analysis 4. Puy de Dôme, France.**—*M.R.*

7E–90 551.594.14:546.296

Garrigue, Hubert, **Anomalies dans la radioactivité naturelle de l'air libre.** [Anomalies of natural radioactivity in the free atmosphere.] *Académie des Sciences, Paris, Comptes Rendus*, 239(13):776–777, Sept. 27, **1954. DWB**—Large anomalies of atmospheric radon content observed in 1948 and 1950 in two different regions [East Pyrenees and Puy de Dôme, France] are tentatively attributed to large-scale shifts of the subsoil. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Radon anomalies 3. France.**—*Trans. of author's abstract.*

7E–91 551.594.14:551.515.3

Harris, D. Lee (*U. S. W. B., Wash., D. C.*), **Effects of atomic explosions on the frequency of tornadoes in the United States.** *Monthly Weather Review*, Wash., D. C., 82(12):360–369, Dec. **1954.** 12 figs., 3 tables, 5 refs. **DWB**—The increase in tornadoes reported in the United States during the past few years is ascribed to better reporting procedures rather than the presence of atomic debris. Maps showing the distribution of fallout in the United States during the first and second halves of May, 1953, are given. *Subject Headings:* **1. Atomic explosion effects on weather 2. Tornado frequencies.**—*R. J. List.*

7E–92 551.594.14

Ishibashi, M.; Shigematsu, T.; Ishida, T. et al., **Radiochemical analysis of the Bikini ashes.** *Kyoto. Univ. Institute for Chemical Research, Bulletin*, (*Supplementary issue*), Nov. **1954.** p. 39–59. 33 figs., 10 refs. **DLC**—Two samples of particles from the "Fukuryu Maru" gave the following decay curves for a period of 81 days following May 4, the 64th day after the burst: $A_t = A_0 t^{-1.17 \pm 0.02}$ for white ashes; $A_t = A_0 t^{-1.24 \pm 0.05}$ for dark grey ashes. Radiochemical analysis yielded Ca^{45}, Sr^{89}, Y^{91}, Zr^{95}, Nb^{95}, Ru^{103}, Rh^{103m}, Ru^{106}, Te^{129}, I^{131}, Ba^{140}, La^{140}, Ce^{144}, Pr^{144}, and U^{237} in Bikini ashes. Rain which fell on Kyoto on May 16, 1954, showed activity of about 1μc/l. Analysis of the rain showed Sr^{89}, Zr^{95}, Nb^{95}, Ba^{140}, and rare earth. *Subject Headings:* **1. Radioactive fallout composition. I. Okada, S. II. Nishi, T. III. Takahashi, H. IV. Matsumoto, C. V. Shimizu, S. VII. Hirayama, F. VIII. Okamoto, S.**—*R. J. List.*

7E–93 551.578.7:551.594.

Jaffe, Gilbert; Wittmann, Walter and Bates, Charles C. (*all, U. S. Navy. Hydrographic Off. Wash., D. C.*), **Radioactive hailstones in the District of Columbia area, May 26, 1953.** *American Meteorological Society, Bulletin*, 35(6):245–249, June **1954.** 5 figs., ref. **MH-BH**—At about 2000 26 May 1953 the District of Columbia area experienced a hailstorm in which individual hailstones ranged up to the size of tennis balls. Determinations of the radioactive count of the water content of these hailstones and of roof gravels, indicate that considerable material was brought to earth by the hailstorm from the explosion of the atomic cannon shell 29 hrs earlier some 2000 airline miles away in Nevada. The air-flow pattern at upper levels proves to have been around a high-pressure ridge located between the two sites. Such a pattern permitted the arrival of such radioactive material over the District of Columbia area within the time noted. (*Same item as* 6.2–276, Feb. 1955, *MAB.*) *Subject Headings:* **1. Radioactivity in hailstones 2. Atomic explosions 3. Upper air flow patterns 4. Washington, D. C.**—*Authors' abstract.*

7E–94 551.594.14:551.4

Kikkawa, Kyōzō, **Study on radioactive spring.** *Japanese Journal of Geophysics*, Tokyo, 1(1):1–25, May **1954.** 8 figs., tables, 14 refs., 14 eqs. **DWB**—A thorough theoretical and empirical study of diurnal and seasonal effects on meteorological variables on radon content of spring water based on data obtained nearly every day from Dec. 23, 1949 to Jan. 2, 1951 at Zuihozi spring in Arima, Hyogo Prefecture, Japan. Tabulated data include amount of discharge, temperature of spring, air temperature, Rn content and Cl content. Relationships between these elements are shown by scatter diagrams or curves. Rainfall produces several kinds of variation in Rn content: heavy rains in some cases increase the discharge thus reducing the Rn content which later comes back to normal, at other times rain increases the content which then decreases to normal and sometimes little change occurs. Unusual variations may be accredited to temperature, pressure, freezing, ground or snow cover. Conclusion is that radon exhalation from soil air and dilution by excessive rainwater are the controlling factors. *Subject Headings:* **1. Radon content of soil air 2. Radon content of springs 3. Meteorological effects on radioactive springs 4. Arima, Japan.**—*M.R.*

7E–95 551.594.1

Kikuchi, Takehiko; Akagi, Hiroaki; Goto, Hiroshi et al., **Radioautographic studies of the radioactive ashes obtained from the No. 5 Fukuryu Maru.** *Kyoto. Univ. Institute for Chemical Research, Bulletin, (Supplementary issue)*:12–17, Nov. **1954.** 4 figs., table, ref. **DLC**—Made radioautographic studies of particles collected on "Fukuryu Maru," using X-ray film, radioautographic stripping plates and plates for alpha emitters. Found no correlation between radioactivity and size of particles. As a rule, there was parallelism between beta and alpha particles. Some particles showed more alpha than beta particles and in some alpha tracks seemed to be emitted from one corner of the particle. Distribution of radioactivity in each particle not uniform. Microphotographs. *Subject Headings:* **1. Radioactive fallout analysis. I. Wakisaka, Gyoichi.**—*R. J. List.*

7E–96 551.594.14

Kikuchi, Takehiko; Wakisaka, Gyoichi; Akagi, Hiroaki et al., **Studies on the properties and size of the radioactive ashes obtained from the No. 5 Fukuryu Maru.** *Kyoto. Univ. Institute for Chemical Research, Bulletin, (Supplementary issue)*:4–11, Nov. **1954.** 5 figs., 5 tables, ref. **DLC**—Examined dimensions and radioactivity of 200 particles collected by crew member of "Fukuryu Maru" and preserved by wrapping in paper. Under microscope there was some surface unevenness but as a rule particles looked like semi-transparent glass. Two to four black, spot-like grains about 2–3μ seen on particles. Diameter of particles 100–400μ, mean 257. Ratio of minimum of maximum diameter 0.3 to 1.0, mean 0.74. No direct correlation of particle size and radioactivity. Particles with black spots appeared to show strong radioactivity. On May 16, 1954, 1.0 mg showed 4218 c/m (0.4μc of Co^{60} showed 7475 c/m under same counting conditions). Microphotographs. *Subject Headings:* **1. Radioactive fallout analysis. I. Goto, Hiroshi.**—*R. J. List.*

7E–97 551.594.14:627.1

Kilcawley, E. J.; Clark, H. M.; Ehrlich, H. L. et al., **Measurement of radioactive fallout in reservoirs.** *American Water Works Association, Journal*, 46(11):1101–1111, Nov. **1954.** 5 figs., table, 3 refs. **DLC**—An extensive survey of radioactivity in the Troy, Albany, Schenectady water supply system was made in an investigation following the heavy rainout which occurred in that area on April 26, 1953. Samples of water, soil, algae, plants, etc. were measured for radioactivity. Decay rates, effectiveness of filtration, rate of disappearance, etc. were studied. The general contamination of the ground at arrival time was 1μc/ft^2. Surface water on RPI campus had $2.7\times10^2\mu\mu$c/ml. Measurements were also made for subsequent bursts. Corrected to time of rainout, highest rainwater activity was 25.0$\mu\mu$c/ml on June 9, 1953. Highest stream samples 0.10–.13$\mu\mu$c/ml. Alpha activity of same samples was also investigated. *Subject Headings:* **1. Radio-**

vity in reservoirs 2. Radioactive rainout 3. New York. I. Kelleher, W. S. II. Schultz, H. E. Krascella, N. L.—*R. J. List.*

7E–98 551.594.14

*Kyoto. University. Institute for Chemical Research, **Radioactive dust from the nuclear onation.** Its *Bulletin, Supplementary Issue*, Nov. **1954.** 133 p. figs., tables, refs. **DLC**—s extensive factual account contains 14 detailed reports on measurements made in connection a radioactive contamination of the Japanese fishing boat "Fukuryu Maru." Data on size and perties of fallout particles and on radioactivity of ashes, various objects on the ship, fish, etc., presented and discussed. Five papers are studies on the metabolism and various biological cts of fission products on the basis of experiments undertaken on animals with radioactive ashes. robarographic oscillations produced by H-bomb explosions are also reported. All papers are in glish. Six of the reports (those considered to be of particular interest from a meteorological nt of view) have been abstracted separately (*see items* 7E–92, –95, –96, –111, –115 and –120). *oject Headings:* **1. Radioactive fallout analysis 2. Biological effects of radioactivity. I. Kyoto. iv. Radioisotope Research Committee.**—*G.T.*

7E–99 551.594.14:551.510.42

List, R. J., **On the transport of atomic debris in the atmosphere.** *American Meteorological iety, Bulletin*, 35(7):315–325, Sept. **1954.** 13 figs., table, 3 refs. **DWB.** Also in: *Air Pollution ntrol Association, Pittsburgh, Journal*, 5:153–156, 183, **1955. MH-BH**—Collections of radio-ive debris were made daily at 120 Weather Bureau stations throughout the U. S. during the mic test series in Nevada in the Spring of 1952. The measuring techniques employed and the teorological factors involved in the transport and deposition of debris are discussed. Several mples of the relation of computed meteorological trajectories to actual observations of debris given. (*Same item as* 6.5–342, May 1955, *MAB.*) *Subject Headings:* **1. Radioactivity measure-nt techniques 2. Radioactive fallout propagation 3. United States.**—*Author's abstract.*

7E–100 551.594.14:662:539.1

Martin, Charles-Noël, **Sur les effets accumulatifs provoqués par les explosions thermonucléaires a surface du globe.** [On the cumulative effects of thermonuclear explosions on the surface of the be.] *Académie des Sciences, Paris, Comptes Rendus*, 239(20):1287–1289, Nov. 15, **1954.** refs. **WB.** Review in: *Time*, 64(25):66–67, **1954.** port. **DLC**—Possible chemical, climatic, radio-ive and genetic effects of thermonuclear explosions are discussed. The following effects are ggested as being measurable: 1) variations in pH content of rain water (limited in space and time), a marked increase of atmospheric C 14, 3) a (probably weak) increase of secondary cosmic radiation sea level, 4) decrease of solar radiation intensity, 5) world-wide rainfall anomalies, 6) changes the absorption band of nitric acid in the airglow spectrum and 7) presence of a large quantity of dioactive elements in the atmosphere. Some of these phenomena are irreversible and will become rmful after a certain threshold is reached, possibly with less than a hundred explosions. (*Same m as* 6.8–343, Aug. 1955, *MAB.*) *Subject Headings:* **1. Thermonuclear explosion effects 2. Radio-tive fallout.**—*G.T.*

7E–101 551.594.14:662.2:539.16

Meteorological Society of Japan, **Statement concerning hydrogen bomb of the Met. Soc. Jap.** *s Journal*, 32(5/6):181, May/June **1954. MH-BH**—According to this statement issued by the eteorological Society of Japan on the occasion of injuries done to Japanese fishermen by H-bomb sts in the Bikini Atoll, meteorological factors may combine to extend harmful effects of thermo-clear explosions through the following mechanisms: (1) dispersion of radioactive ashes all over the rld, (2) persistent large-scale contamination of the atmosphere affecting the amount of insolation d leading to weather disasters and (3) contamination of rain and sea water, disastrous for agri-lture and fishing. In view of these possibilities, the Society demands discontinuation of experi-ents involving nuclear weapons, international control of the peaceful use of atomic energy and blication of data on the harmful effects which may follow H-bomb explosions. *Subject Headings:* **Atomic explosion effects 2. Radioactive fallout.**—*G.T.*

7E–102 551.578.8:551.594.14

Miyake, Y., **The artificial radioactivity in rain water observed in Japan from May to August, 54.** *Papers in Meteorology and Geophysics*, Tokyo, 5(2):173–177, Sept. **1954.** 11 figs., 2 refs. **H-BH**—Observations on radioactivity of rainwater are being conducted at 10 university laborator-s in Japan (Kagoshima, Hiroshima, Osaka, Kyoto, Nagoya, Shizuoka, Tokyo, Kanazucoa, Niigata d Hirosaki, and the C.M.O. in Tokyo, etc.). Lat. and long. and names of research workers at ch are tabulated. Results obtained at these places during April, May and June 1954 and tra-ctories of air over Pacific in May 1954 are shown on graphs and charts. High values of 0.5×10^{6}

curie) were reported by T. Shimizu of Kyoto Univ. on May 19, and 6.19 × 10⁻⁴ at Tokyo on May 17, 1954. Several laboratories reported such fission products as Ba¹⁴⁰, La¹⁴⁰, Sr⁸⁹, Zr⁹⁵, Nb⁹⁵, I¹³¹, I¹³³, I¹³⁴, Je¹³⁹, etc. U²³⁹ and Np²³⁹ and some rare earth elements. Energy of β rays and γ rays were also measured in some instances. Bikini explosion of May 5 seems to be responsible for most of the high values reported. *Subject Headings:* 1. Radioactive fallout composition. 2. Bikini H-bomb tests, 1954. 3. Japan.—*M. R.*

7E-103 551.594.14 :[illegible]

Moch, Jules Salvador. **La folle des hommes.** [Human folly.] Paris, Robert Laffont. 1955. 285 p. 11 figs. 11 tables. Translation into English by Edward Hyams as **Human folly: to die or perish?** With introd. by Albert Einstein. London, Victor Gollancz. 1955. 222 p. 6 tables. DLC—This book is an appeal for peaceful settlement of world problems in view of horrors of atomic warfare. In Ch. 3 the effects of thermonuclear explosions are discussed: chemical, thermal and immediate and residual radiation effects. Estimates of direct and indirect A and H-bomb effects are derived from facts known about atomic explosions of the past. *Subject Headings:* 1. Thermonuclear explosion effects. I. Hyams, Edward (trans.). II. Einstein, Albert. —*G. T.*

7E-104 551.594.14:55[illegible]

*Nader, J. S.; Goldin, A. S. and Setzer, L. R. **Radioactive fallout in Cincinnati area.** *Amer. Water Works Association. Journal.* 46:11:1092-1100. Nov. 1954. illus. 2 tables. 5 refs. DLC—Precipitation in the Cincinnati area was measured for suspended and soluble radioactivity from March, 1953, to March, 1954. "Background" level in precipitation was 0.05 to 0.08 μμc/ml. Maximum concentration on April 29, 1953, 500 μμc/ml. 500 μμc/ml corrected for decay. Maximum fallout from a single rain on May 22, 1953: 1.55 in. containing 85 μμc/ml, giving 8.75 curies/sq. mi. Soluble activity averaged 60–80% of total before and after tests, fell to 50% during tests. Surface streams and tap water show most of activity removed by normal purification. Accumulated and decayed rain activity on June 30 and Dec. 31, 1953, was 2.4 and 0.35 curies/sq. mi. respectively. *Subject Headings:* 1. Radioactive fallout data. 2. Radioactivity in precipitation. 3. Cincinnati, O. —*R. J. List.*

7E-105 551.583:662.2:5[illegible]

Nardone, Antonio. **Le esplosioni atomiche possono influire sulle variazioni atmosferiche?** [Do atomic blasts affect weather conditions?] *Ciampino Interairport.* Rome. 6:10:16-17. Oct. 1954. 2 photos. MH-BH—The author sarcastically rejects the suggestion that A-bomb blasts may be related to the unusual weather conditions lately observed. Energies released by such explosions are negligible compared to those involved in climatic processes of the atmosphere. Tornadoes were frequently occurred in past decades and centuries. Possible extraneous causes are: solar activity, magnetic storms, melting of polar ice. *Subject Headings:* 1. Atomic explosion effects on weather. 2. Climatic variations.—*G. T.*

7E-106 551.5[illegible]

Nishiwaki, Yasushi. **Bikini ash.** *Atomic Scientists' Journal.* London. 4:2:97-109. Nov. 1954. 2 tables. plate. DLC—Results of measurements of radioactivity from thermonuclear explosions at Bikini testing grounds, especially the one on March 1, 1954, are reported. The measurements showed considerable radioactive contamination of the "Fukurin Maru" and other fishing boats, sea water, rain, vegetables, milk and drinking water. Conditions of patients from the "Fukurin Maru" are described. *Subject Headings:* 1. Radioactive fallout. 2. Bikini H-bomb tests, 1954.—[illegible]

7E-107 551.59[illegible]

*Tolal, Egon and Tolal-Rüling, Johanna. **Radioaktive Luftmessungen im Raum von Badgastein und Bockstein.** [Measurement of radioactive air in the vicinity of Badgastein and Bockstein.] *Anzeiger der Wissenschaftlichen Klasse. Math.-Naturw. Klasse. Akademie der Wissenschaften.* Wien. 91:5:103-107. 1954. 4 figs. 11 tables. 10 references. DLC—In Badgastein and Bockstein a series of samples were tested for radion content during the period 1949–1952. The samples were taken at various towns in Austria, Switzerland and in a mine shaft. Particularly remarkable among the results is the high average radion content of the air in Bockstein (2.1 × 10⁻¹¹ c/l). The highest value of 11 × 10⁻¹¹ c/liter was found in the Pochkar shaft. *Subject Headings:* 1. Radioactivity content of atmosphere. 2. Salzburg Province, Austria.—*Trans. of [illegible]*

7E-108 551.50[illegible]

Radioactive gages show snow water. *Electrical World.* San Francisco. 112:3:[illegible]. Aug. 1954. illus. DLC—Telemetering system that uses radioactive snow gages to bring daily reports of water content of remote snow packs into system operator's office in use in California by [illegible]

Engineers; gage consists of heavy lead tube planted in vertical position flush with ground; in lower end of tube two units of cobalt 60 have sufficient strength to penetrate and measure snow depth equivalent to 55 in. of water. *Subject Headings:* **1. Telemetering systems 2. Radioactive snow gages 3. Water content of snow pack.**—*Engineering Index Service, No. 54—13580.*

7E–109 551.578.1:551.594.14

Rain three weeks old. *Science News Letter*, 66(13):197, Sept. 25, **1954.** **DLC**—The measurement of tritium radioactivity (half-life 12.5 years) provides a possibility of measuring the age of the water due to its contact with higher atmospheric layers, where tritium is formed by the action of cosmic rays. Rain on the average has three-week "old" water, deep water wells produce 50-year old water. Rain water mixes with ocean water down to 150 ft. (*Same item as* 7.4–236, April 1956, *MAB.*) *Subject Headings:* **1. Tritium measurement 2. Radioactivity in rainwater. I. Libby, W. F.**—*A.A.*

7E–110 551.510.42:539.16

Schumann, G., **Wie gross ist die künstliche Radioaktivität der Luft?** [How great is the artificial radioactivity of the air?] *Umschau*, 54(9):267–268, May 1, **1954.** 2 figs. **DWB**—The half-life of the different products of an atom bomb explosion enables the date of the explosion to be calculated. The concentration of fission products at Königstuhl near Heidelberg rose from nearly zero to 2.5×10^{-12} c/m³ on May 14, 1953, following explosion on May 8, but this amount is far too small to have any deleterious effects. (*Same item as* 5.9–104, Sept. 1954, *MAB.*) *Subject Headings:* **1. Radioactivity in the atmosphere 2. Atomic explosions 3. Königstuhl, Germany.**—*C.E.P.B.*

7E–111 551.594.14

Shimizu, Sakae; Akagi, Hiroaki; Goto, Hiroshi et al., **Survey of the radioactive contamination of the No. 5 Fukuryu Maru.** *Kyoto. Univ. Institute for Chemical Research, Bulletin, Supplementary issue:*1–3, Nov. **1954.** fig., 2 tables, 4 refs. **DLC**—Reports results of survey of "Fukuryu Maru" with radiation monitor on March 19, April 21, and May 16, 1954. On March 19, highest contamination ($\beta+\gamma$) found on wet rope on upper deck, 80–150 mr/hr. Found 50–70 mr/hr in quarter crew space. Later surveys showed decrease in contamination greater than predicted by fission-product decay law due to cleaning by rain. Using March 19 data and assuming various coefficients for fission-product decay law, it is estimated that the total γ dosage to the crew during their exposure from March 1 to 14 averaged from 200 to 550 r. *Subject Headings:* **1. Radioactive fallout analysis 2. Radioactive dosage. I. Okamoto, Sunao II. Ishida, Takanobu III. Kawai, Yagoro.**—*R. J. List.*

7E–112 551.594.14:551.510.42

*Singer, Irving A., **Comparison of computed and measured ground-level dose rates from radioargon emitted by the Brookhaven reactor stack.** *U. S. Brookhaven National Laboratory, BNL*, 292, T-49, May **1954.** 42 p. 30 figs., 8 tables+extensive tables in appendixes, 16 refs., eqs. **DWB**—The nuclear reactor at Brookhaven National Laboratory is air-cooled and consequently measurable amounts of radioargon (A^{41}) are emitted into the atmosphere. By a combination of theory and experimental data obtained from oil fog concentration measurements, an approximate solution to the problem of determining dose rates from the radioargon under various meteorological conditions has been obtained. The purpose of the paper is to compare the calculated values with measured weekly and hourly values of A^{41} at eight Health Physics stations. (*Same item as* 6.5–92, May 1955, *MAB.*) *Subject Headings:* **1. Radioargon concentration 2. Diffusion equations 3. Radioactive effluents 4. Brookhaven, N. Y.**—*Author's abstract.*

7E–113 662.2:539.1:551.515.539

Steinhauser, Ferdinand, **Atomenergie und Weltwetter.** [Atomic energy and world weather.] *Universum*, Vienna, 9(16):481–488, Aug. 2, **1954.** 3 figs., cover photo. Also his: **Atombombenexplosionen und Wettergeschehen.** [Atom bomb explosions and weather phenomena.] *Universitas*, Stuttgart, 9(11):1189–1196, Nov. **1954.** Abstracted from reprint. **DWB**—Atomic blasts will not affect large-scale weather development. This is supported by general data showing that: 1) the order of magnitude of energy released in thermonuclear explosions is insignificant compared with that involved in large-scale atmospheric processes, 2) the energy supply from explosions is instantaneous and therefore cannot influence a continuous process like weather development, 3) the world-wide rainfall amount cannot be permanently increased by a supply of condensation nuclei (supposedly provided by atomic explosions) because (a) there are usually enough condensation nuclei present in the atmosphere, (b) the mere presence of sufficient condensation nuclei does not produce precipitation and (c) increased precipitation would have to be balanced by increased evaporation; which does not result from atomic explosions. As to planned weather modification, the author believes that this could be achieved by slow rather than explosive release of thermonuclear

energy. He leaves open the question whether such a weather modification plan would be practica and desirable. (*Same item as* 6.7–178, July 1955, *MAB.*) *Subject Headings:* **1. Atomic explosion effects on weather 2. Grosswetterlagen 3. Weather modification 4. Condensation nuclei.**—*G.T*

7E–114 551.594.14:551.510.42

Stern, Curt (*Calif. Univ. Berkeley*), **One scientist speaks up.** *Science*, 120(3131):5A, Dec. 31, **1954. DWB**—Possible cumulative effects of radioactive particles introduced into the atmosphere by thermonuclear explosions, even when only experimental, are discussed in the light of Dr. Albert Schweitzer's appeal to scientists to express themselves freely for the benefit of mankind. *Subject Headings:* **1. Radioactive pollution of atmosphere 2. Radioactive fallout. I. Schweitzer, Albert.**—*M.R.*

7E–115 551.594.14

Suito, Eiji; Takiyama, Kazuyoshi and Uyeda, Natsu, **Colloid morphological and crystalline studies of "Bikini dust" fallen on the No. 5 Fukuryu Maru by electron microscopy and diffraction methods.** *Kyoto. Univ. Institute for Chemical Research, Bulletin, Supplementary issue:*18-28, Nov. **1954.** 3 figs., 24 photos, table, 4 refs. **DLC**—Studies particles which fell on the "Fukuryu Maru" by microscope and X-ray analysis. Granules averaged 0.3 mm in size with specific gravity of 2.42, composed of cubic and spindle-shaped unit particles of $0.1 \sim 3\mu$. Particles were calcite, whereas coral reef is aragonite, suggesting that the coral reef was evaporated, then recrystallized to calcite and aggregates of the unit particles fell. Microphotographs included. *Subject Heading:* **1. Radioactive fallout analysis.**—*R. J. List.*

7E–116 551.554:539

Teichmann, Horst, **Wettereinfluss von Atomexplosionen als Störung periodischer Strömungen in der Stratosphäre.** [Weather influence of atomic explosions as a disturbance of periodic currents in the stratosphere.] *Naturwissenschaften*, 41(21):498, Nov. **1954. DWB**—Suggests that atomic explosions, reaching into the stratosphere, cause small disturbances which may be magnified by the periodic oscillations of the streamlines there. (*Same item as* 6.5–202, May 1955, *MAB.*) *Subject Headings:* **1. Atomic explosion effects on weather 2. Stratospheric winds.**—*C.E.P.B.*

7E–117 551.594.14(02)

*U. S. Air Weather Service, **Radioactive fall-out plots.** Its *Air Weather Service Manual* 105-33. Oct. 15, **1954.** 22 p. 15 figs (incl. tables) "Supersedes its AWS Manual 105–33, June 2, 1952." **DWB**—A detailed manual outlining procedures and illustrating methods for determining areas which only become contaminated with radioactive particles within 6 hrs after an explosion of a fission or a fusion bomb. Equipment, wind vector diagrams, ground fallout plot, and transmission of ground fallout data, constitute the major headings. Air bursts do not, as a rule, provide much fallout hazard. Surface bursts kick up a lot of dust which is carried down wind. Subsurface bursts carry into the atmosphere a tremendous amount of material: distance depends on (1) cloud height, (2) size of particles and (3) mean wind speed. Heights of 60,000 ft are estimated as the ceiling for small particles. Decay, rain washing out, and vertical currents are not considered in procedure outlined. Forecasting degree of contamination is not considered either. (*Same item as* 7.4–294, April 1956, *MAB.*) *Subject Heading:* **1. Radioactive fallout calculation manuals.**—*M.R.*

7E–118 551.594.14:355

U. S. Engineer School, Fort Belvoir, Va., **Atomic weapons reference data.** March **1954.** 29 p. 13 figs., 6 tables. **DLC**—The purpose of this pamphlet is to provide students of the Engineer School with general unclassified data concerning nuclear weapon effects sufficiently accurate to serve as reference material for the practical solution of such problems as may be engendered by atomic warfare considerations in the field. The tables and diagrams presented show blast, thermal and radiation effects of air, surface and underground bursts on troops and materials as functions of energy released, distance from explosion and wind direction. A diagram showing gamma ray attenuation in various materials in included. *Subject Headings:* **1. Atomic explosion effects 2. Military meteorology.**—*G.T.*

7E–119 551.553.8 551.557:551.542.1

Weiller, A. R., **Les tempêtes artificielles sont-elles pour demain?** [Will artificial gales be produced tomorrow?] *La Météorologie*, Paris, 4th Ser., No. 34:127–136, April/June **1954.** 12 figs., ref., 23 eqs. English and Spanish summaries p. 127. **MH-BH**—In this theoretical analysis of the dynamics of gradient winds, it is shown how strong winds might be induced in certain synoptic situations by sudden changes in the pressure gradient. Such changes could be caused by atomic explosions. After the thermonuclear explosions on Eniwetok in March 1954 radioactive fallout was reported in unexpected areas; the explosion was found to be twice as powerful as anticipated.

These facts indicate that the baric field may have been disturbed and strong winds produced. (*Same as* 6.8–256, Aug. 1955, *MAB.*) *Subject Headings:* **1. Artificial winds 2. Gradient winds 3. Atomic explosion effects on weather.**—*G.T.*

7E–120 551.541:623.45

*Yamamoto, Ryozaburo, **Microbarographic oscillations produced by the explosions of hydrogen-bombs.** *Kyoto Univ. Institute for Chemical Research, Bulletin, Supplementary issue:*120–133, Nov. **1954.** 8 figs., 4 tables, 5 refs. **DLC**—Reprint issued as: *Kyoto Univ. Meteorological Research Institute, Meteorological Notes*, Ser. 2, No. 1, Nov. **1954.** Shorter version in: *Weather*, 10(10):321–325, Oct. **1955. DWB**—Microbarographic records obtained at tripartite storm microbarograph station at Shionomisaki in S. Central Japan on March 27, 1954, showed speeds similar to those from Krakatoa and Great Siberian meteor (1908) which speeds approach the speed of sound whereas those from storms travel at $\frac{1}{10}$ to $\frac{1}{5}$ that speed. Microbarograph records calculated at 30 other places in Japan also showed high velocities, and on Nov. 1, 1952, March 1, 1954, April 26, 1954 and May 5, 1954 showed similar characteristics. Map shows stations whose location, observers and instruments are described or listed. (For fuller abstract, *see* 7.2–170, Feb. 1956, *MAB.*) *Subject Headings:* **1. Microbarograph oscillations 2. Explosion waves 3. Bikini H-bomb tests, 1954 4. Shionomisaki, Japan.**—*M.R.*

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7E–121 551.594.14

Abribat, Marcel; Pouradier, Jacques and Venet, Anne-Marie, **Évolution de la radioactivité de l'atmosphère de la région parisienne.** [Evolution of atmospheric radioactivity in the Paris region.] *Académie des Sciences, Paris, Comptes Rendus*, 240(24):2310–2312, June 13, **1955.** 2 figs., refs. **DWB**—Atmospheric radioactivity has been measured in Paris since November 1951. Maximum β activities measured during the three years were 3310 cpm for 1952, 1740 for 1953 and 1104 for 1954 (measured in dust filtered out of 7000 cu m of air). The considerable decrease in β activity in 1954 is attributed to the fact that in that year atomic explosions took place in the Southern Hemisphere rather than in Nevada as in 1952 and 1953. It is pointed out, however, that radioactivity following experiments in Russia was also weaker in 1954 than in 1953. Similar results were obtained with the measurement of radioactivity in rain water. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Paris, France.**—*G.T.*

7E–122 551.594.14

Aliverti, Giuseppina (*Dir. Gabinetto di Met. ed Oceanog., Ist. Univ. Navale di Napoli*), **Le esperienze atomiche e la radioattivita dell'aria.** [Atomic tests and radioactivity of the air.] *Geofisica e Meteorologia*, Genoa, 3(1/2):4, Jan./April **1955. DWB**—A nonquantitative discussion of the natural and artificial radioactivity (of several types) in the atmosphere and the possible cumulative effects of effluents from reactors and bomb explosions. *Subject Heading:* **1. Radioactivity in the atmosphere.**—*M.R.*

7E–123 526:551.501.9

American Geophysical Union, Special Committee on the Geophysical and Geological Study of Continents, [**Report of**] **the Committee, 1952–1954.** George P. Woollard, chairman. *American Geophysical Union, Transactions*, 36(4):695–708, Aug. **1955.** 9 figs., 2 tables. **DWB**—Extensive report on seismic, blast, gravity, submarine gravity, radioactive dating, geothermal, magnetic, geoelectrical and tectonic studies, accompanied by data, maps showing worldwide and U. S. networks and coverage, earthquake epicenters, etc. *Subject Headings:* **1. Geodesy networks 2. Continental geophysics. I. Woollard, George P.**—*M.R.*

7E–124 662.2:539.1:612.6

Andrews, Howard L. (*Natl. Cancer Inst.*), **Radioactive fallout from bomb clouds.** *Science*, Wash., D. C., 122(3167):453–456, Sept. 9, **1955.** table, 5 refs., eqs. **DLC, DWB**—The author describes the procedure of evaluating meteorological conditions preceding an atomic detonation and discusses the mechanism of formation of fallout, its biological effects and the nature of and degree of the radiation hazard attributable to fallout. *Subject Headings:* **1. Radioactive fallout 2. Biological effects of radioactivity.**—*I.L.D.*

7E–125 551.594.14:662.2:539.1 551.590.21

Arakawa, Akio; Fujita, T.; Itoo, H. et al., **Climatic abnormalities as related to the explosions of volcano and hydrogen-bomb.** *Geophysical Magazine*, Tokyo, 26(3):231–255, March **1955.** 16 figs., 4 tables, 12 refs., eqs. **MH-BH**—A statistical and synoptic study of violent volcanic eruptions, sunspot minima and cool summers in northern Japan reveals a poor relationship between sunspot activity and cool summers (1755–1954), a significant relation between volcanic eruptions and

cool summers in northern Japan, and no significant relation between sunspot activity and volcan eruptions. It is thought that the volcanic eruptions cause blocking action the next June, and consequent lowering of hemispheric temperature. The possible contamination of the stratosphe in a manner similar to that produced by volcanic eruption and a southward deviation of the jet summer are thought to be possible consequences of the H-bomb explosions such as occurred in t spring of 1954. *Subject Headings:* **1. Abnormal summer, 1954 2. Volcanic influences 3. Sunsp effects on weather 4. Thermonuclear explosion effects 5. Japan.**—*M.R.*

7E–126 551.594.1

Arnold, James R. and Al-Salih, H. Ali, **Beryllium-7 produced by cosmic rays.** *Scienc* 121(3144):451–453, April 1, **1955.** 3 figs., table, refs. **DLC**—It was expected that star productic in nitrogen and oxygen would produce Be^7 and that this would eventually reach the earth in ra water. A series of samples of rain water from Chicago and Lafayette were treated to concentra the activity and various tests showed that this was due to Be^7; further, no change in level w detected after nuclear weapon tests and so the source was cosmic-rays. At Chicago 6×10^5 atom per cm^2 are received in a year at the earth's surface. It appears possible to use this isotope to obta data on processes of air movement in the troposphere and lower stratosphere. *Subject Heading* **1. Cosmic ray effects 2. Radioactivity in rainwater 3. Isotope content of air.**—*Physics A stracts, No. 6657, 1955.*

7E–127 546.79:551.46

†Arrhenius, Gustaf (*Scripps Inst. of Oceanography*) and Goldberg, Edward D. (*C.I.T., Pasadena Calif.*), **Distribution of radioactivity in pelagic clays.** *Tellus*, Stockholm, 7(2):226–231, May 195 3 figs., 5 tables, 13 refs. **DLC**—An attempt is made to study the localization of radioelements i different mineral phases of pelagic clay sediments. The results so far obtained indicate that th ionium supported radium is redistributed by diffusion through the interstitial solution and that th authigenic zeolite phillipsite plays an important role as a scavenger of radioelements within th deposit. The mechanism of transfer of radioelements from the ocean to pelagic deposits is discussec and points of uncertainty in the interpretation of the distribution of gross beta-activity are indicatec *Subject Headings:* **1. Radioactivity in marine sediments 2. Radioactive dating methods 3. Marin sediments.**—*Authors' abstract.*

7E–128 551.5:662.2:539.

Atomic explosions and the weather. *Journal of Scientific and Industrial Research, Sec. A* New Delhi, 14(7):344, July **1955.** 2 refs. **DWB, DLC**—Possible effect of the enormous energ release resulting from explosions of thermonuclear bombs in the Pacific on changes of atmospheri conditions (thereby modifying the weather) are discussed and analyzed as to the energy effect, th cloud seeding effect, the electric effect as well as the effect on solar radiation. After consideratio of the most plausible theories and of the best available observational evidence there appears to b no reason for believing that atomic explosions have changed the weather. *Subject Heading:* **1. Atomi explosion effects on weather.**—*A.M.P.*

7E–129 551.594.14:551.578.1

Bandopadhyay, K. G.; Ghosh, G. C.; Bandopadhyay, P. et al., **Radioactive nuclei in rains ove Calcutta.** *Science and Culture*, Calcutta, 21(5):273–275, Nov. **1955.** 2 figs., 5 refs. **DLC**—Radio activity of rain water was measured in Calcutta from March to Sept. 1955. Radioactivity counts are plotted against the rainy days for the entire period. An analysis of residual matter revealed th preponderance of β-activity and the presence of some α- and γ-activity. *Subject Headings:* **1. Radio activity in rainwater 2. Calcutta, India. I. Chakravarti, J. C. II. Chatterjee, S. D.**—*G.T.*

7E–130 662.2:539.1:551.574.1

Best, A. C., **Atomic explosions and condensation nuclei.** *Meteorological Magazine*, London 84(997):201–204, July **1955.** 4 refs., eqs. **DWB**—The supersaturation necessary for a droplet carrying an electric charge to grow indefinitely is calculated. Even with 100 electronic charges a supersaturation of 7% is necessary. Both conditions are improbable. Solid particles require a charge of 50 e.u. to be effective as condensation nuclei. A vertical current of 48 ft/sec would be necessary to maintain a humidity of 100.5%. Atomic explosions are unlikely to affect condensatior at a distance. (*Same item as* 61–129, Sept. 1955, *MAB.*) *Subject Headings:* **1. Atomic explosior effects on condensation nuclei 2. Charged nuclei 3. Supersaturation.**—*C.E.P.B.*

7E–131 662.2:539.1:612.6

Biological hazards of radiation. *Nature*, London, 175(4460):695–697, April 23, **1955. DWB**— An account of the discussions at various levels on the genetic effects of the fallout of radioactive matter from the thermonuclear bomb. It is concluded that we have insufficient knowledge t

edict whether there is any appreciable danger, including insufficient knowledge of the movements the atmosphere at great heights. Radioactivity of the planet has slightly increased as a result the bomb explosions. (*Same item as* 6.8–82, Aug. 1955, *MAB.*) *Subject Headings:* **1. Biological fects of radioactivity 2. Radioactive fallout.**—*C.E.P.B.*

7E–132 551.594.14

Chatterjee, Santimay, **Radioactive ashes over Calcutta and a method of dating a nuclear xplosion.** *Atomic Scientists Journal*, London, 4(5):273–278, May **1955.** 2 figs., 2 tables, 4 refs., eqs. **DLC**—Following the Bikini H-bomb explosions weak β activity was measured over Calcutta n dust samples and rain water. An attempt is made at dating nuclear explosions from the β decay urves of the radioactive dust. *Subject Headings:* **1. Radioactive fallout 2. Bikini H-bomb tests, 954 3. Calcutta, India.**—*G.T.*

7E–133 551.594.14 662.2:539.1

Cockcroft, Sir John, **Radioactive pollution from nuclear explosions.** *Smokeless Air*, 94:192–196, Summer **1955. DWB**—Average concentration of radioactivity in the air at ground level over Britain due to hydrogen bomb explosions is about 1% of average natural radioactivity, far too little or lethal or genetic effects. Other possibilities are also negligible. Radioactive by-products of tomic power stations can also be controlled. (*Same item as* 6.9–74, Sept. 1955, *MAB.*) *Subject Headings:* **1. Thermonuclear explosions 2. Radioactive fallout 3. Great Britain.**—*C.E.P.B.*

7E–134 662.2:539.1 551.594.14

Cockcroft, Sir John, **Radiological hazards from nuclear explosions and nuclear power.** *Nature*, London, 175(4464):873–875, May 21, **1955. DWB**—The concentration of radioactivity over England due to distant bomb explosions is about 1% of natural radioactive dust. Nearly all the radiation is absorbed by brick houses. The average dose received during a generation is estimated as less than 0.003 r; anything less than 12.5 r is harmless. Other effects such as production of nitric acid and absorption of solar radiation by dust are also harmless. The genetic effects of an atomic war would be the least of the evils. By-products of nuclear power development can be disposed of safely. (*Same item as* 6.8–83, Aug. 1955, *MAB.*) *Subject Headings:* **1. Radiation hazards 2. Radioactive fallout 3. England.**—*C.E.P.B.*

7E–135 551.5:662.2:539.1

Dunning, Gordon M. (*U. S. Atomic Energy Com., Wash., D. C.*), **Effects of nuclear weapons testing.** *Scientific Monthly*, 81(6):265–270, Dec. **1955.** 24 refs. **DWB, DLC**—Among other things, the author considers the possible relationships between test nuclear explosions and the weather. Some of the effects suggested are listed and disproved. *Subject Heading:* **1. Atomic explosion effects on weather.**—*I.L.D.*

7E–136 551.594.14:662.2:539.1

Eisenbud, Merril and Harley, John H. (*U. S. AEC*), **Radioactive fallout in the United States.** *Science*, Wash., D. C., 121(3150):677–680, May 13, **1955.** 2 figs., 11 refs. **DLC**—During 1952, 1953 and 1954 atomic tests in Nevada and the Pacific, a network of 89 monitoring stations was maintained in the U. S. to obtain samples of radioactive fallout. The samples were obtained on 1 ft^2 gummed surfaces mounted on a frame 3 ft above the ground. The coating is adhesive when wet, so dust entrapped in rain drops is collected. The films are changed each day and sent to the AEC laboratory in New York, where the samples are ashed at 550–600°C and the radioactivity counted with an accuracy of $\pm 10\%$. Network stations are listed and manner of testing illustrated graphically. Various components such as Sr^{89} and Sr^{90} are discussed as to half-life, manner of production and fallout. Map of U. S. shows cumulative fallout in the U. S. from spring of 1951 to end of 1954. Values range from 21 millicuries/sq mi in Arizona to 120 in N. Mexico. Nevada is omitted from the data. Examples of heavy fallout at great distance are cited. None of the values thus far measured are considered anywhere near biologically dangerous levels. (*Same item as* 7.2–276, Feb. 1956, *MAB.*) *Subject Headings:* **1. Radioactive fallout networks 2. Atomic explosion effects 3. United States.**—*M.R.*

7E–137 551.594.14:612.6

Garrigue, Hubert, **Nouvelle recrudescence d'activité d'origine atomique dans l'atmosphère.** [Another renewal of atmospheric radioactivity of atomic origin.] *Académie des Sciences, Paris, Comptes Rendus*, 240(13):1453–1455, March 28, **1955.** 2 refs. **DLC**—Beta activity was measured in dust samples taken in flight and snow and rime samples taken on Puy de Dôme (1450 m). The values obtained are comparable to natural radon amounts. Although the radioactivity measured does not constitute an immediate biological hazard, an increase of such pollution might cause the

higher organisms to degenerate and eventually to disappear. *Subject Headings:* **1. Radioactivi in the atmosphere 2. Puy de Dôme, France.**—*G.T.*

7E–138 551.594.14:551.574.4

Garrigue, Hubert, **Radioactivité de l'atmosphère.** [Radioactivity of the atmosphere.] *Ac démie des Sciences, Paris, Comptes Rendus,* 241(25):1971–1972, Dec. 19, **1955.** table, ref. **DWI DLC**—Measurements made at the ground (Puy de Dôme, 1450 m) and in flight (up to 5 km) betwee Nov. 12, 1955 and Nov. 29, 1955, show a marked increase in β rays on Nov. 25, 1955, with a maximu value equivalent to 70 particles per cc of atmosphere for 35 days. Measurements were from hoa frost accumulated on collector. Traces were observed before and after. *Subject Headings:* **1. Radio activity in the atmosphere 2. Radioactivity in hoar frost 3. Puy de Dôme, France.**—*M.R.*

7E–139 551.594.14:5

Harbour, Dave, **The cloud over sheep mountain.** *Sport Airfield,* N. Y., 134(1):30–31, Jul **1955.** photos. **DLC**—Attempt to determine effect of atomic fallout from series of tests at Yucc Flat in Nevada on wild sheep, rabbits, etc. have been made and conclusion is that no serious damag has been done to wildlife in area, though some skin burns from β radiation might occur within 1 or 20 mi of the detonation. Extreme care has been taken in firings to see that winds would n carry hot debris to any distance. (*Same item as* 7.4–292, April 1956, *MAB.*) *Subject Heading* **1. Radioactive fallout effects on wildlife 2. Nevada atom bomb tests 3. Yucca Flat, Nevada.**—*M.F*

7E–140 551.594.14:551.594.13:551.510.42:662:539.

Harris, D. Lee (*U. S. W. B., Wash., D. C.*), **Effects of radioactive debris from nuclear explosion on the electrical conductivity of the lower atmosphere.** *Journal of Geophysical Research,* 60(1 45–52, March **1955.** 4 figs., 12 refs., 2 eqs. Also in: *U. S. Air Force. Cambridge Research Cente Geophysical Research Papers,* No. 42:140–146, Nov. **1955. DWB**—An increase in the ionizatio near the ground due to the fall-out from a radioactive cloud formed by a nuclear explosion wi increase the conductivity and lower the potential gradient in the lower atmosphere. Records c atmospheric conductivity and potential gradient from the Tucson Magnetic Observatory are com pared with records of the deposition of atomic debris on the ground following the Nevada tests The observed changes are not inconsistent with values computed from theoretical considerations Most of the effects are confined to a very shallow layer, within a few meters of the ground. (*Sam item as* 6.8–341, Aug. 1955, *MAB.*) *Subject Headings:* **1. Radioactive fallout 2. Electrical conduc tivity of air 3. Potential gradient 4. Thermonuclear explosion effects.**—*Author's abstract.*

7E–141 551.510.42:551.594.1

Harris, W. E. et al., **The Measurements Section discuss radiation hazards: discussion, Feb. 15 1955 on A services engineer at Harwell.** *Institution of Electrical Engineers, London, Journa* New Ser., No. 8:518–519, Aug. **1955.** 3 photos. **DLC**—Methods of air conditioning used a Harwell to reduce radiation hazards arising from radioactive dust. *Subject Headings:* **1. Radiatio safety measures 2. Air conditioning.**—*M.R.*

7E–142 551.510.42:551.594.1

Heslep, J. M. and Bellamy, A. W., **Sampling for airborne radioactivity.** *Air Repair,* Pittsburgh Pa., 5(1):1–4, May **1955.** 6 refs. **DWB**—Nature and source of radioactive particles, biologica effects, size of particles most effective in body (5μ), retention and exhalation, sources of contamination of air during various phases of atomic industry, methods of sampling and analysis and problem connected therewith, constructive use of radioactive aerosols (tagging air currents for meteorologica studies), networks of sampling stations and success in predicting concentrations at these stations ar discussed. (*Same item as* 7.4–128, April 1956, *MAB.*) *Subject Headings:* **1. Radioactive fallou networks 2. Radioactive aerosols.**—*M.R.*

7E–143 551.579.5:551.594.1

Hours, R. (*Commissariat à l'Énergie Atomique, France*), **Les traceurs radioactifs en hydrologie** [Radioactive tracers in hydrology.] *Société Hydrotechnique de France, Paris, Mémoires et Travaux* No. 1, **1955,** p. 14–24. 4 figs., table, 18 refs. English summary p. 14. **DWB**—Radioactive iodin and bromine can be used in tracing ground water more advantageously than by using present colo tracer methods. Retention by the soil, poisoning of the soil, etc. are discussed and results of quanti tative measurements tabulated and analyzed. *Subject Headings:* **1. Radioactive hydrologic tracing methods 2. Ground water movements.**—*M.R.*

7E–144 551.594.14:551.510.42:551.508.82

Ishii, Chihiro (*Met. Res. Inst., Tokyo*), **Method of measurement of radio-active dusts in the upper air by radiosonde.** [In: International Conference on the Peaceful Uses of Atomic Energy

Geneva, 1955, [**Proceedings**], A/CONF.8/P/1056, July 11, **1955.** 14 p. 4 figs., table, 13 refs.] **DLC**—Measurements of gamma radiation in the upper atmosphere were made by means of a balloon-borne bundle of Geiger-Müller counters which telemetered results to a ground station. Results indicate a general increase in activity with altitude above the first km, with a peaking at the tropopause level. Subtraction of a mean cosmic ray background for the latitude gives the distribution of radioactive substances in the atmosphere, which are estimated to average 10^{-16} c/cc in the winter of 1955. Airplane flights with a dust impinger at one to three km gave 2×10^{-18} c/cc. *Subject Headings:* **1. Radioactivity measurement techniques 2. Radiosonde measurement of radioactivity.** —*R. J. List.*

7E–145 551.594.14

Kimura Kenjiro (*Tokyo Univ.*), **Radiochemical analysis of radioactive dusts.** [In: International Conference on the Peaceful Uses of Atomic Energy, Geneva 1955, [**Proceedings**], A/CONF.8/P/1058, July 11, **1955.** 33 p. 18 figs., 6 tables, refs.] **DLC**—The specific activity of the ashes which fell on the "Fukuryu Maru" at 7:00 a.m., March 1, 1954, is estimated as 1.4 c/g. A detailed and extensive account of the radiochemical analysis of the ash, including procedures and results, is given. *Subject Heading:* **1. Radioactive fallout analysis.**—*R. J. List.*

7E–146 551.594.14

Kimura, Kenjiro; Minami, Eiiti; Saito, Nobufusa et al., **Radiochemical interpretation of the radioactive fallout.** [In: International Conference on the Peaceful Uses of Atomic Energy, Geneva 1955, [**Proceedings**], A/CONF.8 P 1059, July 11, **1955.** 11 p. fig., 5 tables, refs.] **DLC**—Following the Nagasaki detonation in Aug. 1945, a small village 2.5 km east of the blast was contaminated, probably by rain which occurred shortly after the detonation. A detailed radiochemical analysis of the sample was made in 1951 to study the long-lived radionuclides, Sr^{90} ($+Y^{90}$), Cs^{137} ($+B^{137m}$) and Ce^{144} ($+Pr^{144}$) were found, together with a long-lived α-emitter, presumably Pu^{239}. The activity in the samples in 1951 were as much as several hundred cmp per gram at approximately 10% counting yield. *Subject Headings:* **1. Radioactive fallout analysis. I. Sasaki, Yukiyoshi II. Kokubu, Nobuhide.**—*R. J. List.*

7E–147 551.5:662.2:539.1

King, J. A., **Is world weather affected by nuclear explosions?** *South Africa. Weather Bureau, News Letter*, No. 73:1–2, April 30, **1955.** **DWB**—Although present data are too limited and knowledge inadequate, it is the author's opinion that no evidence exists to show that thermonuclear explosions can be held responsible for a world-wide increase in rainfall and cloudiness. None of the features of world weather occurring in the past few years have been unprecedented, therefore it is safe to say that effects of dust, sea salt particles or energy added to the atmosphere have not equalled effects occurring naturally. *Subject Headings:* **1. Thermonuclear explosion effects 2. Weather modification.**—*M.R.*

7E–148 551.508.9

Klick, C. C.; Rabin, H.; Lambe, J. J. et al., **Simple meter for radioactive fall out.** *U. S. Naval Research Laboratory, NRL Report*, No. 4571, June 14, **1955.** 7 p. 4 figs., 3 refs. **DWB**—A dose rate meter has been constructed using a battery, cadmium sulphide crystal, and parallel combination of condenser and neon flash lamp. It is sensitive over a range of 0.1 Roentgen to 1000 Roentgens/hr, is reasonably energy independent, has a flash rate proportional to gamma dose rate, and uses only commercially available components. *Subject Headings:* **1. Radioactive dose rate meters 2. Radioactivity measurement techniques. I. Peake, H. J. II. Cole, P. T.**—*Authors' abstract.*

7E–149 551.594.14

*Libby, W. F., **Dosages from natural radioactivity and cosmic rays.** *Science*, Wash., D. C., 122(3158):57–58, July 8, **1955.** 5 tables. **DWB**—Total radiation dosages from natural background radiation in mr/yr are given for sea level, 5, 10, 15 and 20 thousand ft altitude at equator and 55°N, over several types of surface. Cosmic ray dosages in mr/yr are also tabulated for the same elevations. Dosages from natural radiation of the human body, and from various other types of materials, objects and X-rays; and gamma and cosmic ray data obtained in streets, buildings and in the open by several authorities are likewise tabulated and discussed. Natural dosages are variable by a factor of 100 to 1 in different conditions. Fallout dosages may exceed natural dosages for a few days. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Cosmic ray dosages in atmosphere.**—*M.R.*

7E–150 551.594.14:612.6

Luckow, L.; Widdoes, L. C. and Mesler, R. B., **Hazards due to airborne fission products; external γ and β, inhalation, and rainout.** Appendix E, from unidentified source. [1955?] 19 p.

6 figs., table, 5 refs., eqs. **DWB**—Biologically significant values of fission products from nuclear reactors are calculated and quantitative results presented in diagrams as functions of distance from reactor, wind, velocity, continuous reactor power and meteorological situation (lapse or inversion condition). Dose parameters and critical organs for various fission product isotopes are shown in a table. *Subject Headings:* **1. Radiation hazards 2. Biological effects of radioactivity.**—*G.T.*

7E–151 551.594.14:551.506.9(793)

*Lynch, Daniel E., **Radioactive debris in North America from Operation Teapot.** *U. S. Atomic Energy Commission, Report NYO-4659*, Aug. **1955.** 3 p. fig., 3 tables, 2 refs. **DLC**—Total fallout from the Spring 1955, Nevada tests as observed at over 100 stations in North America for the period of Feb. 18–May 20, 1955 is given. Fallout in the United States ranged from 3.1 millicuries per sq mi along the west coast to 850 millicuries per sq mi at Ely, Nevada, extrapolated to Jan. 1, 1956. (Data in the immediate area of the tests is not given.) The maximum fallout recorded in one day is 600 millicuries per sq mi, extrapolated to Jan. 1, 1956, at Ely on March 7, 1955. Moderate amounts of fallout continued beyond May 20. *Subject Headings:* **1. Radioactive fallout data 2. Ely, Nevada.**—*R. J. List.*

7E–152 551.594.14:551.515:662:539.1

Machta, L. and Harris, D. L. (*U. S. W. B., Wash., D. C.*), **Effects of atomic explosions on weather.** *Science*, 121(3134):75–81, Jan. 21, **1955.** 6 figs., 14 refs. **DWB**—Various suggested mechanisms by which atomic explosions might influence weather have been reviewed. They include the following hypotheses: that the atomic debris might serve as a cloud seeding agent, that the radioactive nature of the debris might change the electric conductivity of free atmosphere, that the dust resulting from atomic explosion might obscure the solar radiation and that the energy of the explosion might affect significantly the weather beyond the testing location. No theoretical reason has been found for believing that the above mechanisms could alter the weather significantly more than a few miles from the explosion site. Increase of tornadoes in 1953 was a reflection of greater accuracy in tornado statistics. Temperature and precipitation anomalies fail to show any relationship to atomic explosions. (*Same item as* 6.8–342, Aug. 1955, *MAB.*) *Subject Headings:* **1. Atomic explosion effects on weather 2. Weather modification.**—*I.L.D.*

7E–153 551.594.14

Martin, Charles-Noël, **L'heure H, a-t-elle sonné pour le monde? Effets accumulatifs des explosions nucléaires.** [The H hour, has it sounded for the world? The cumulative effects of nuclear explosions.] Preface by Albert Einstein. Paris, Bernard Grasset, **1955.** 254 p. photos, tables. **DLC**—The purpose of this book is to disseminate knowledge on nuclear physics and to remind scientists of the dangers of atomic experimentation. In the first part a general outline is given of the nuclear structure of matter. Pt. 2 contains an account of the experimental A and H bomb blasts of the past, while in Pt. 3 (p. 153–239) the author considers theoretically the possible future effects of continued nuclear explosions. The intense heat generated, acidity of rain water, the presence of dust in the stratosphere, radioactive fallout, harmful isotopes, and their direct and indirect meteorological and biological effects are discussed. The author contends that various products of atomic explosions may disturb the equilibrium of climatic factors and that there would be no assurance that normal conditions could be re-established. It has been argued that the energy involved in nuclear explosions is too small for meteorological effects. This argument misses the point because climatic effects are caused by a global distribution of fission products (dust, radioactive ions, nitric acid) rather than direct action of the energy released. Factual data on various phenomena connected with nuclear explosions are appended. *Subject Headings:* **1. Nuclear physics 2. Thermonuclear explosion effects. I. Einstein, Albert.**—*G.T.*

7E–154 551.463/4:551.594.14

Miyake, Yasuo; Sugiura, Yoshio and Kameda, Kazuhisa (*Met. Res. Inst., Tokyo*), **On the distribution of the radioactivity in the sea around Bikini Atoll in June, 1954.** *Records of Oceanographic Works in Japan*, n.s., 2(1):34–44, March **1955.** 8 figs., table, 6 refs. Also issued as: *Papers in Meteorology and Geophysics*, Tokyo, 5(3/4):253–263, Jan. **1955. DWB**—Observations were made from May 15, 1954 to July 4, 1954 aboard the "Shunkotsu-Maru" of the Ministry of Agriculture and Forestry from Tokyo to Bikini Atoll. Methods of measuring radioactivity in sea water, the horizontal and vertical distribution of radioactivity in the sea around Bikini, and the relation between the sea water radioactivity and the radioactive fallout are given in detail. The actual measurements on different days and places and at various depths are presented tabularly and analyzed graphically. (*Same item as* 6.10–43, Oct. 1955, *MAB.*) *Subject Headings:* **1. Radioactivity in ocean water 2. Radioactive fallout data 3. Bikini H-bomb tests, 1954 4. Pacific Ocean.**—*M.R.*

7E–155 551.594.14:551.578.11

Miyake, Yasuo (*Met. Res. Inst., Tokyo*), **Radioactivity in rain water and the air observed in an, 1954–1955.** [In: International Conference on the Peaceful Uses of Atomic Energy, Geneva 5, [**Proceedings**], A/CONF.8/P/1055, July 11, **1955.** 11 p. 6 figs., 10 refs.] **DLC**—Radioivity was detected in the rain in southern Japan beginning May 14, 1954, reaching a maximum c/l on May 16 at Kyoto Univ. Trajectories indicate air came from Bikini via the Philippines Formosa. Activity from May to Sept. 1954 was always stronger on the Pacific side of Japan n on Japan sea side, maximum values in latter area less than 4 mμc/l. Active material concen-ed at the beginning of rain. Rain along a cold front in the wake of a typhoon on Sept. 18, 1954, radioactive, reaching a maximum of 0.3μc/l on Sept. 22 at Yamagata, on northern Japan sea st, and decreasing in activity as air from south moved in. Similar activity, also presumably n U.S.S.R. in early Nov. Dry fallout in Tokyo on Nov. 4–5, 1954, was 5mμc/m²/day and air centrations of 10^{-12}–10^{-10} c/m³ were observed near the ground at Kyoto by an electric precipi-or. The highest rain activity in the spring of 1955 was 3 ~ 4 mμc/l with the activity of the air at kyo increasing when a high pressure center is above the Japan sea area or off the northeastern st on the Pacific side. *Subject Headings:* **1. Radioactivity in rainwater 2. Radioactive fallout a 3. Japan.**—*R. J. List.*

7E–156 551.463/4:551.594.14

*Miyake, Y. and Sugiura, Y. (*both, Met. Res. Inst., Tokyo*), **The radiochemical analysis of radio-clides in sea water collected near Bikini Atoll.** *Records of Oceanographic Works in Japan*, Tokyo, ., 2(2):108–112, Oct. **1955.** 5 figs., 2 tables, ref. **DWB**—Results are presented of a radiochemical alysis of sea water from 12°18′N, 161°3′.5E on June 20, 1954, 450 km N.E. of Bikini (where bomb tests were made during March to May 1954). Total count was 1830 cpm/l aboard "Shun-tsu-Maru," just after sampling. By Aug. 12, 1954 it had decreased to 320 cpm/l. Activity Dec. 1, 1954 should have been 190 cpm/l. Decay curve was concluded to be $A(t) = ct^{-1.5}$, where (t) is activity, c a constant and t the time elapsed since explosion. Radioactivity of 5 constituents s measured from Dec. 11–22, 1954, ranging from 1100 cpm for the 55% of Ce-141, 144 to 40 cpm r the 2% of Sr-89(90). Methods are detailed. *Subject Headings:* **1. Radioactivity in ocean water Bikini H-bomb tests, 1954.**—*M.R.*

7E–157 551.463/4:551.594.14

*Miyoshi, Hisashi (*Tokyo Univ.*); Hori, Sadakiyo and Yoshida, Shozo (*both, Hydrog. Off., Mari-ne Safety Agency, Tokyo*), **Drift and diffusion of radiologically contaminated water in the ocean.** *ecords of Oceanographic Works in Japan*, Tokyo, n.s., 2(2):30–36, Oct. **1955.** 4 figs., 2 tables, refs., 7 eqs. **DWB**—Radiologically contaminated water from the lagoon on the eastern atoll of ikini, carried by the North Equatorial current was detected by a Japanese Survey Ship (the Shunkotsu-Maru") along the 163°50′E meridian (150 mi W of Bikini) 38 days after the last of the sts in March–May, 1954. The material proved of value in tracing the currents and vertical ldy diffusivity which latter was found to be 5 cm²/sec in the upper mixing layer. Contaminated ater was found 800 km ENE, probably due to a counter current. Speed of fall of calcite particles different diameters (5–840μ) to be .3 to 8950 hours to depth of 500 m. *Subject Headings:* **1. Radio-ctivity in ocean water 2. Bikini H-bomb tests, 1954.**—*M.R.*

7E–158 551.594.14:662.2:539.1:612.6

Muller, H. J. (*Zoology Dept. Indiana Univ.*), **Genetic damage produced by radiation.** *Science*, Vash., D. C., 121(3155):837–840, June 17, **1955.** 8 refs. **DLC**—A pro-and-con discussion of ossible cumulative genetic damage of radioactive fallout from all of the atomic tests in U. S., Pacific and U.S.S.R. or of damage from an atomic war. Even the conservative estimate of 0.1 r or each of the population of the U. S., when multiplied by 160,000,000 is said to be exactly equal o the 100 r×160,000 people at Hiroshima, though admittedly the genetic damage would occur in nore isolated instances, be spread over a longer time, and be small compared to mutations occurring aturally. Author considers mutations to be a serious factor, nevertheless, and for the worse 99 imes out of 100. *Subject Headings:* **1. Biological effects of radioactivity 2. Mutations due to adioactive fallout 3. Radiation hazards.**—*M.R.*

7E–159 551.510.5:551.515.8:551.594.14

Neuwirth, R. (*Met. Obs., Freiburg, Germany*), **Meteorologische Auswertung von Messungen ler künstlichen Radioaktivität der Luft und des Niederschlags.** [Meteorological evaluation of neasurements of artificial radioactivity in the air and in rainfall.] *Geofisica Pura e Applicata*, Milan, 32:147–158, Sept./Dec. **1955.** fig., 26 refs. English and German summaries, p. 147. **DWB, DLC**—German, French and American measurements of the rainfall and air activity are being valuated. For that purpose trajectories of the experimental grounds for atomic bomb tests in Nevada up to Western Germany are drawn. By means of intermediate values the test possibility

of air paths—first only scheduled—is given. The so-called "Deposit spaces" and meridi circulations, which are significant particularly in divergence regions prove to be of especial portance. The mechanism of activation of precipitation is discussed. A connection between activity of precipitation and airmasses could only be found in individual cases. But it seems the semitropical airmasses dispose of a higher specific activity in comparison with the polar masses. *Subject Headings:* **1. Upper air flow patterns 2. Radioactive fallout propagatio** *Author's abstract.*

7E–160 662.2:5

Nishiwaki, Yasushi, **Effects of H-bomb tests in 1954.** *Atomic Scientists Journal*, Lon 4(5):279–288, May **1955.** table, map. **DLC**—Results of various extensive measurements mad Japan in connection with nuclear tests in the Pacific are reviewed. The phenomena observe particular were: radioactivity in rainfall and in the upper atmosphere all over Japan; dust floa in the upper atmosphere; barographic oscillations resulting from shock waves; contamination of fishing boat "Fukuryu Maru" and its crew; and radioactivity in crops and fish. *Subject Headi* **1. Thermonuclear explosion effects 2. Bikini H-bomb tests, 1954 3. Japan.**—*G.T.*

7E–161 551.594:551.508.9:519

Ogawara, M., **On the error of radioactivity count number.** *Journal of Meteorological Resea* Tokyo, 7(8):507–509, Oct. **1955.** 4 refs., 21 eqs. In Japanese. **DWB**—A mathematical treatm of the accuracy of radioactive counters is given with explanatory text in Japanese. Errors derived as functions of counting rate. *Subject Heading:* **1. Radioactive counter accuracy.**—*G.T.*

7E–162 551.594.14:

Pozdnyakov, V., **Atomic defense in the Soviet army.** *Institute for the Study of the History Culture of the USSR, Munich, Bulletin*, 2(8):13–19, Aug. **1955.** 8 refs. **DLC**—Basic considerati governing protective measures for military personnel in the U.S.S.R. are outlined. Protection fr immediate and prolonged effects of atomic blasts includes personal defense and an atomic defe service which would secure the removal of troops from contaminated areas and their decontaminati Most of the information is from the Soviet army newspaper Red Star. *Subject Headings:* **1. Radiat safety measure 2. Military meteorology.**—*G.T.*

7E–163 551.594.14:662.2:53

Preston, R. L. and Hogg, B. G., **Radioactive fall-out in Kingston, Canada.** *Nature*, Lond 176(4479):459, Sept. 3, **1955.** fig. **DWB**—Tests of snow, rain and dust at Kingston, 2200 N.E. of U. S. nuclear testing ground, Feb. 15 to May 28, 1955, show that every explosion was follow by radioactivity, but meteorological factors outweighed the magnitude of the explosions. *Sub Headings:* **1. Atomic explosion effects 2. Radioactive fallout data 3. Kingston, Canada.**—*C.E.P*

7E–164 551.557:551.594

*Ratner, Benjamin, **Winds and fallout: a climatological appraisal.** Wash., D. C. Weat Bureau, June **1955.** 19 p. 13 charts, 6 refs. **DWB**—The work is mainly concerned with frequency and strength of winds at 3 and 10 km; at 700 and 300 mb in Jan. and July, over continen U. S., and the mean geostrophic winds at 200, 100, 50 and 25 mb. A page is devoted to a diagr of fallout patterns which occurred on April 10 and 11, 1955 over Pennsylvania and a brief discussi of these and of relation of fallout to upper winds in general. Jet stream wind, seasonal conditi at the various levels, frequency of west winds, sources of errors, effect of stratosphere (height tropopause) and other relations brought out by the charts are discussed in text. *Subject Headin* **1. Upper air winds 2. Jet stream 3. Radioactive fallout propagation.**—*M.R.*

7E–165 551.594

Reiter, Reinhold, **Der Emanationsgehalt der Luft in den nördlichen Kalkalpen in Abhängigk von atmosphärischer Schichtung und Windrichtung.** [On the emanation content of the air in northern Chalcolitic Alps in relation to atmospheric structure and wind direction.] *Naturwiss schaften*, 42(23):622–623, Dec. **1955.** fig., 2 refs. **DWB**—Determinations of thoron and rad were made on Zugspitze plateau Aug.–Sept. 1955. In temperature inversions there were impulses/min compared with 335 in convective weather. With SW–SE winds emanation was times that with winds from W–N–E. These results are of interest for atmospheric electricity a bioclimatology. (*Same item as* 7.4–293, April 1956, *MAB.*) *Subject Headings:* **1. Radioact emanations 2. Zugspitze, Germany.**—*C.E.P.B.*

7E–166 551.594.14

The role of the warden in panic prevention. *U. S. Federal Civil Defense Administration, C Defense Technical Bulletin*, TB-7-1, rev. Sept. **1955.** 4 p. Also: **Protection against fallout radiati**

id., TB-11-19, Sept. **1955.** 2 p. 8 refs. Also: **Radiological instruments for civil defense.** *Ibid.*, 3-11-20, Sept. **1955.** 4 p. 5 photos, 6 refs. Also: **Fallout and the winds.** *Ibid.*, TB-11-21, t. **1955.** 7 p. 9 figs., 9 refs. **DWB**—The first three papers deal with practical and technical oblems of civil defense. The last paper takes up the prediction of fallout areas and radiation vels from upper wind forecasts and climatic data on prevailing winds. Among the schematic awings presented are diagrams comparing sizes of A-bomb, H-bomb and thunderstorm, and show- g effects of particle size, height and wind over size of fallout area and a map of U. S. showing erage winds between 40,000 and 80,000 ft for Jan. *Subject Headings:* **1. Radiation safety measures Radioactive fallout propagation.**—*G.T.*

7E–167 551.594.14:551.501

†Shapiro, E.; Gibbs, J.; Field, E. et al., **Development of a tracer technique.** Tracerlab, Inc., oston, Mass., Contract AF 19(604)-1045, Final Report, Aug. 19, **1955.** 77 p. 20 figs., 3 charts., 3 tables, bibliog. p. 59–60, eqs.—An extensive report on development of a radiological tracer chnique which involves selection of a tracer (tritiated ethane) preparation of gas; development a gas dispenser, an air sampler and a method of analysis. The tracer is nearly like air in molecular eight, does not constitute a health hazard, lends itself to chemical analysis and the methods of nalysis are known. Field tests were made and compared with SO_2 tracer technique. *Subject eadings:* **1. Radioactive tracer techniques. I. Tracerlab, Inc., Boston, Mass. II. Contract AF 9(604)-1045 III. Dillon, T.**—*M.R.*

7E–168 551.594.14:551.510.42:662.2:539.1

Sittkus, A., **Beobachtungen an radioaktiven Schwaden von atomtechnischen Versuchen im ahre 1953 54.** [Observations of radioactive swathes from atomic experiments in 1953/54.] *Naturissenschaften*, 42(17):478–482, Sept. **1955.** 5 figs., table, 11 refs. **DWB**—Radioactive products of n atomic explosion can be traced half or a third way round the globe. Rain and snow bring them own and the natural level on the ground may be doubled. A systematic investigation of the adioactivity of air and rainwater was carried out in and near Freiburg following the Nevada and Marshall Island explosions. The amount was very variable from day to day. A method of deermining the date of an explosion is described. Use of radioactive products as indicators of atnospheric currents is discussed. (*Same item as* 7.2–119, Feb. 1956, *MAB.*) *Subject Heading:* **. Radioactive fallout propagation.**—*C.E.P.B.*

7E–169 551.541:623.454.9

Skeib, Günther, **Beobachtungen von Druckwellen bei Wasserstoffbomben-Explosionen im ahre 1954.** [Observations of pressure waves from hydrogen bomb explosions in 1954.] *Zeitschrift ür Meteorologie*, 9(9):280–282, Sept. **1955.** fig., 2 tables, 3 refs. **DLC**—The Bikini explosions of eb. 28, March 26, April 25 and May 4, 1954 were recorded on barographs at Potsdam, Lindenberg, Vahnsdorf and Collm 11–12 hrs later as pressure waves of 0.1 to 0.2 mmHg amplitude. Barograms re reproduced. The mean velocity of the waves was 288–313 m/s. (*Same item as* 7.4–192, April 956, *MAB.*) *Subject Headings:* **1. Pressure waves 2. Thermonuclear explosion effects 3. Bikini -bomb tests, 1954 4. Germany.**—*C.E.P.B.*

7E–170 551.509.58:662.2:539.1

Spohn, Clifford A. (*Weather Briefing Off., Nevada Test Site*), **Weather support for the atomic ests.** *Weatherwise*, Boston, 8(5):111–115, 130, Oct. **1955.** 2 figs., 2 photos, table. **DWB**—In his account of the weather support provided by the U. S. Air Force Weather Service to the Atomic Energy Commission at the Nevada Test Site, the author describes the organization of the forecast unit, the basis for preparing the forecast, the obtaining of upper air data, the operational routine of forecasting for each atomic test, etc. Maps showing the special upper air sounding network for the Nevada Test Site and Weather Bureau network providing special observations for Nevada Test Site are included. *Subject Headings:* **1. Specialized forecasts 2. Atomic test weather service 3. Yucca Flat, Nevada.**—*I.L.D.*

7E–171 551.594.14:551.506.9

*Stewart, N. G.; Crooks, R. N. and Fisher, E. M. R., **The radiological dose to persons in the U.K. due to debris from nuclear test explosions.** *Harwell, England. Atomic Energy Research Establishment, A.E.R.E.*, HP/R 1701, June **1955.** 27 p. 4 figs., 3 tables, 13 refs.—Presents a summary and an extensive interpretation of radioactivity measurements in the United Kingdom and of aircraft measurements over that area. Vast majority of particles less than 10μ. Discusses sources of residual radiation. Cloud from nominal bomb confined by tropopause and Intertropical Convergence Zone and observations suggest that lateral diffusion virtually complete after one circuit of the earth. Debris normally first observed in the U.K. on the fifth day after a Nevada burst. Deposition removes half the material from the atmosphere in 22 days. For thermonuclear bursts,

most debris is injected into the stratosphere and diffuses slowly into the lower atmosphere. Airpla observations in the autumn of 1954 confirmed this, indicating large accumulations of fine dust in t stratosphere. Individual peak concentrations in the U.K. are generally about 5 dpm/m^3, high individual peak 25 dpm/m^3 from nominal bombs. Highest peak from thermonuclear bomb, 0 dpm/m^3. Average concentration April 1952 to April 1955, 0.5 dpm/m^3, mostly from Neva explosions. Natural RaB and RaC averaging as high as 470 dpm/m^3 and peak concentrations 1800 dpm/m^3 have been observed in U.K. Measurements of deposition by rain also made, 80 of the integrated gamma dose from a Nevada cloud deposited by rain due to deposition on fi crossing of U.K. Exposed vaseline-coated slides, concluded that deposition by normal rainfall w 4 times that due to dry deposition. Highest daily deposit, 240 mc/sq mi, 5 days after A Nevada te Highest from a thermonuclear test, 100 mc/sq mi. Computations of the gamma dose and t deposition of Sr^{90} and Pu^{239} in U.K. given. Mean gamma dose rate to exposed person 1 r/yr. E timated gamma dose to average person in U.K. for 50-year period from all bombs prior to May 1955, 1.6 mr. Concentration of Sr^{90} on ground on May 1, 1955, 2 mc/sq mi. *Subject Heading* **1. Radioactive fallout data 2. Radioactivity in the atmosphere.**—*R. J. List.*

7E–172 551.5:662.2:539

Sutton, Sir Oliver Graham, **Thermonuclear explosions and the weather.** *Nature*, Londo 175(4451):319–321, Feb. 19, 1955. 6 refs. **DWB**—The summer of 1954 in Britain followi H-bomb explosions in the Pacific was cool, wet and dull, but no records were broken. Long peri records suggest that it was a continuation of a general trend, and aerological evidence does not sh any relation to the explosions. The energy of the most violent explosion is only equal to that of o small depression. Debris thrown into the upper atmosphere was many times less than in t Krakatoa eruption, which had no effect on British weather. Radioactive nuclei are very unlike to cause any significant increase of rainfall over a large area. (*Same item as* 6.6–43, June 195 *MAB.*) *Subject Headings:* **1. Thermonuclear explosion effects on weather 2. Abnormal summe 1954.**—*C.E.P.B.*

7E–173 551.594.14:551.578.

Tanaevsky, Olga and Vassy, Etienne, **Radioactivité naturelle et artificielle de l'atmosphèr** [Natural and artificial radioactivity of the atmosphere.] *Annales de Géophysique*, Paris, 11(4 486–490, 1955. 3 figs., table, 25 refs. **DLC**—Atmospheric radioactivity produces essentiall discontinuous records. In calm air an accumulation of radon content usually builds up but disappears with the slightest wind. No annual periodicity is found. Rainwater collected with special gage lately has shown considerable radioactivity of artificial origin. *Subject Heading* **1. Radon content of atmosphere 2. Radioactivity in rainwater.**—*Trans. of authors' abstract.*

7E–174 551.594.1

*Tanaevsky, Olga and Vassy, Etienne, **Variations de la radioactivité naturelle et artificielle c l'atmosphère.** [Variations of natural and artificial radioactivity of the atmosphere.] *Académ des Sciences, Paris, Comptes Rendus*, 241(1):38–40, July 4, 1955. fig., table, 7 refs. **DWB**— Continuous (from Dec. 1953 to June 1955) measurement of atmospheric radioactivity carried o at a height of 4 m at Val Joyeux showed the absence of any relationship between the presence radon, temperature and pressure. However, there seems to be a relationship with wind speed radioactivity increases when the wind is slight. The radioactivity of rain and snow water collect in a special gage appears to be stronger at the beginning of the rain (from 87 impulses/min to 2 after a rainfall of 22 mm). The strongest radioactivity registered was of 724 microcuries. T established radioactivity seems to be of artificial origin due to recent atomic explosions. *Subje Headings:* **1. Radioactivity variations 2. Radioactivity in precipitation 3. Val Joyeux, France.**— *A.M.P.*

7E–175 551.594.1

Tanaka, Shinjiro, **Death ash: experience of 23 Japanese fishermen.** *Japan Quarterly*, Toky 2(1):36–42, Jan./March 1955. **DLC**—An account of the tragic fishing trip of the "Fukuryu Maru and description of injuries suffered by its crew as a consequence of radioactive fallout which settl on the boat operating 148 km from the site of an H-bomb test on March 1, 1954. Effects of radi active fallout on fish, vegetables, drinking water, etc., are discussed. *Subject Heading:* **1. Radi active fallout effects.**—*G.T.*

7E–176 551.594.1

Thomas, C. D.; Gainer, M. K. and Ball, T. W., **Relation of radon to non-active air contamin tion.** *Nature*, London, 175(4460):732–733, April 23, 1955. **DWB**—Interim report of measures radon in West Virginia, where coal is a common fuel. *Subject Heading:* **1. Radon content of a mosphere.**—*C.E.P.B.*

7E–177 551.5:662.2:539.1

*Tokyo. Meteorological Research Institute. Forecast Research Laboratory, **Climatic abnormalities as related to the explosion of volcano and H-bomb.** *Meteorological Society of Japan, Journal*, Ser. 2, 33(3):101–116, July **1955.** 22 figs., 4 tables, 12 refs. In Japanese; English summary p. 101. **DWB, DLC**—The effects of volcanic explosion on the climatic abnormalities are investigated statistically and synoptically. The abnormal weather during the summer season in 1954 when the large-scale H-bomb experiment was made is found to have the similar features as the climatic abnormalities caused by volcanic dust. The distribution of temperature anomalies and annual variation of it are discussed in relation to the tropospheric circulation. *Subject Headings:* **1. Thermonuclear explosion effects on weather 2. Abnormal summer, 1954 3. Japan.**—*Author's abstract.*

7E–178 551.594.14:612.2

U. S. Atomic Energy Commission, **Effects of high-yield nuclear explosions (with) statement by Lewis L. Strauss.** Wash., D. C. U. S. Govt. Print. Off., Feb. **1955.** 19 p. **DLC**—Describes the extent of fallout especially as observed during the thermonuclear test on Bikini, March 1, 1954, which contaminated an area extending some 220 miles down-wind and varying in width up to 40 mi. It is estimated that "there was sufficient radioactivity in a down-wind belt about 140 mi in length and of varying width up to 20 mi to have seriously threatened the lives of nearly all persons in the area who did not take protective measures." About one half of such persons would have been threatened at about 60 mi down-wind from the point of detonation. Effects of different types of radioactive fallout and means of protection are discussed. *Subject Headings:* **1. Thermonuclear explosion effects 2. Biological effects of radioactivity 3. Bikini H-bomb tests, 1954.**—*G.T.*

7E–179 551.5:662.2:539.1

U. S. Congress. Joint Committee on Atomic Energy, **Health and safety problems and weather effects associated with atomic explosions.** Hearings before the Joint Committee on Atomic Energy Congress of the U. S., 84th Congress, 1st Session, on Health and safety . . . April 15, 1955. Wash., D. C., Govt. Printing Office, **1955.** 60 p. 6 figs., photos. **DWB**—Contains statements by Dr. Harry Wexler (accompanied by Dr. Lester Machta) of the U. S. W. B. regarding the possible effect of nuclear tests in Pacific and in Nevada on weather, (radiation and rainfall) and statements of other experts on effects on health, amount of radioactivity in air, etc. Article by Machta and Harris from Science, Jan. 21, 1955 is reproduced here in entirety. Wexler presented graph showing radiation received over 20–30 year period at Table Mt., Calif., and Blue Hill, Mass., indicating pronounced effect of Mt. Spurr, Alaska, volcanic eruption and negligible effect of nuclear explosions in Pacific in 1952 and 1954. *Subject Heading:* **1. Atomic explosion effects on weather.**—*M.R.*

7E–180 551.594.14:551.509.1(02)

U. S. Federal Civil Defense Administration, **Construction of fallout plots from coded messages provided by the U. S. Weather Bureau.** Its *Advisory Bulletin*, No. 188, May 25, **1955.** 10 p. table, figs. Also **Supplement No. 1, Aug. 16, 1955.** 2 p. fig. And **Supplement No. 2, Sept. 27, 1955.** 2 p., 2 attachments. **DWB**—Effective June 1, 1955 fallout messages concerning particles falling from different levels from 5000 to 80,000 feet will be currently transmitted over the U. S. Government Weather Teletype Service "C" twice a day. The coded messages give information on "the direction of potential fallout from Ground Zero and the time of surface arrival of radioactive debris applicable to all the critical target areas in the United States." This **Advisory Bulletin** contains instructions for the practical use of the Weather Bureau messages. Copies of the **U. S. Weather Bureau Upper Air Fallout Code** (*see* 7E–193) and of the paper **Winds and fallout** (*see* 7E–164) are attached. *Subject Heading:* **1. Radioactive fallout calculation manuals.**—*G.T.*

7E–181 551.594.14:35

U. S. Federal Civil Defense Administration, **Operation Cue, the atomic test program of the Federal Civil Defense Administration in cooperation with the Atomic Energy Commission, Nevada Test Site, Spring 1955.** Wash., D. C., U. S. Govt. Printing Office, **1955.** 82 p. figs., graphs, tables. **DLC**—Civil defense activities connected with atomic tests are outlined. The booklet contains description of blast, thermal and radiation effects of nuclear explosions, and diagrams for calculating mechanical, thermal and radiation hazards. Thermal effects are given as a function of thermal energy delivered, distance from explosion and atmospheric turbidity. Civil defense problems connected with fallout are discussed. *Subject Headings:* **1. Radiation safety measures 2. Civilian defense.**—*G.T.*

7E–182 551.594.14(02)

U. S. Weather Bureau, **Fallout of radioactive debris.** Its *Circular Letter* 7–55, Feb. 16, **1955.** 2 p. bound with this is: U. S. Atomic Energy Commission, **Report by the U. S. Atomic Energy Commission on the effects of high-yield nuclear explosions.** For release, Tuesday, Feb. 15, 1955. 30 p. **DWB**—The Circular Letter dated Feb. 16, 1955 and addressed to all first-order stations

gives modifications on the procedure of computing areas of radioactive debris fallout (as outlin in Circular Letter 16–54) in connection with the first AEC report on the effects of high-yield nucl explosions. The necessary modifications are threefold and are due to be facts that: 1) The radi active cloud extends to much greater altitudes than in case of atomic bombs; 2) The widths of t mushroom top of the radioactive cloud can be 40 mi or more; 3) The fallout can be dangerous distances of more than 200 mi and for periods in excess of 12 hrs. Attached is **Report of AEC the effects of high-yield nuclear explosions,** dated Feb. 15, 1955 designed to condense and correl information, some of which already has been made public and other portions of which have been o classified nature. The report deals consecutively with blast and heat effects and protection agai them, immediate nuclear radiation and residual radioactivity. *Subject Heading:* **1. Radioacti fallout calculation manuals.**—*A.M.P.*

7E–183 551.510.42:620.92:539

†U. S. Weather Bureau, **Meteorology and atomic energy.** Prepared for the U. S. Atomic Ener Commission. Wash., D. C., July **1955.** 169 p. numerous figs. (incl. photos), 152 refs. Pric $1.00 from U. S. Govt. Print. Off., Wash., D. C. **DWB**—This is the first major monographic co tribution summarizing theoretical, observational and empirical knowledge of air pollution proble connected with atomic energy production and experimentation. The separate chapters treat t following subjects: 1) air pollution aspects of the atomic energy industry; 2) meteorology in si operations; 3) meteorological fundamentals for air pollution study; 4) an outline of atmosphe diffusion theories; behavior of 5) stack effluents; 6) explosion debris clouds; 7) fallout, washout a rainout from airborne clouds; 8) radioactive cloud dosage calculations; 9) graphical solutions atmospheric diffusion problems; 10) reactor hazard analyses; 11) meteorological equipment a records; 12) climatological data for site selection and planning. The appendix contains a select list of parameters, equations and conversion factors, and a list of 152 references to recent literatu (mostly 1949–1954) on the above subjects, plus a subject index. A wealth of illustrative phot graphic material, charts, maps, sample forms, diagrams and tables add to the value of this wor (For fuller abstract, *see* 7.1–1, Jan. 1956, *MAB.*) *Subject Headings:* **1. Radioactive effluents 2. A mospheric pollution 3. Stack meteorology. I. Pack, Donald H. II. Reichelderfer, F. W III. Wexler, Harry IV. U. S. Atomic Energy Commission.**—*M.R.*

7E–184 551.594.1

Warners, C. J., **Note on radioactive compounds in the atmosphere.** *Tellus,* 7(3):403–40 Aug. **1955.** table, 7 refs. **DWB**—Since Jan. 1, 1955, daily measurements of the radioactivity of t air have been made by the Royal Netherlands Meteorological Institute. The highest values note were in the period April 28–30, in tropical air transported from the south, and reached $27.4 \times 10^{-10} \mu c$ Measurements of rain and snow also show considerable day-to-day variability, activities of $8 \times 10^{-7} \mu$ per ml have been observed. *Subject Headings:* **1. Radioactivity in the atmosphere 2. Netherland** —*R. J. List.*

7E–185 551.5:662.2:539

What's affecting the weather? *Franklin Institute, Philadelphia, The Institute News,* 19(8):1, March **1955. DWB**—In connection with a show at Fels Planetarium, Philadelphia, a few meteor logical topics are taken up, such as possible meteorological effects of nuclear explosions, the fore casting value of weather lore, and weather observation from artificial stellites. *Subject Heading* **1. Thermonuclear explosion effects on weather 2. Weather lore.**—*G.T.*

7E–186 551.594.14:551.577.1

Yamasaki, Fumio and Kaneko, Hideko, **On the artificial radioactivity in rain water: observatio of radioactivity in rain water in Tokyo from April to Dec. 1954, and a simple method of determinin the date of explosion.** *Tokyo. Scientific Research Institute, Journal,* 49(1,391):137–143, June 195 5 figs., 2 tables, 4 foot-refs. **DWB**—Rainwater analyses made for rainfall occurring between Apr and Dec. 1954 at Tokyo show remarkable increases in May, Sept. and Nov. An analysis of t decay curves shows that explosions of radioactive nature occurred about 10 days prior to dates of t increase in rainwater radioactivity. Methods of analyzing fallout, decay curves and determinatio of t_0 (time of explosion) are discussed and illustrated by detailed graphs and supporting quantitativ data. A negative correlation was found between rainfall intensity and radioactivity. Since t graphic method of determining t_0 applies to known explosion dates, it will be satisfactory for d termining unknown dates. *Subject Headings:* **1. Radioactive fallout analysis 2. Radioactivity rainwater 3. Tokyo, Japan.**—*M.R.*

1956

7E–187 551.594.1

Blifford, I. H., Jr., and Rosenstock, H. B., **Fallout dosages at Washington, D. C.** *Scienc* **123**(3198):619–622, April 13, **1956.** 4 figs., refs., 8 eqs. **DLC**—Also issued as *U. S. Naval Resear*

boratory, Report, NRL 4654, Nov. 3, 1955.—The total infinity dosage at Washington, D. C., due to fallout fission product debris from all atomic tests which took place between Jan. 1951 and May 1955 has been estimated from the measured air concentration at ground level. Within order of magnitude accuracy, this dosage was found to be about 0.2 roentgen. The Nevada tests contributed about 60% of this amount, and the Russian tests about 33%, with the remainder due to tests in the Pacific. Evidence for stratospheric holdup of activity from the thermonuclear tests of the spring of 1954 has been found. Fallout of this high altitude activity corresponds to an infinity dosage of about 0.0002 roentgen. *Subject Headings:* **1. Radioactive fallout data 2. Washington, D. C.**—*Authors' abstract.*

7E–188 **551.594.14**

Garrigue, Hubert and Perrin, Albert, **Trou soufflant radioactif au sommet du Puy-de-Dôme.** [Radioactive air hole at the Puy de Dôme peak.] *Académie des Sciences, Paris, Comptes Rendus,* 242 (10):1345–1346, March 5, 1956. table, 2 refs. **DWB**—A hole, 10 cm in diameter, formed naturally in the snow cover, discharges warm (+3°C), radioactive air (400 to 800×10⁻¹⁶ c/cm³). *Subject Headings:* **1. Radioactive emanations 2. Puy-de-Dôme, France.**—*Transl. of authors' abstract.*

7E–189 **662.2:539.1:551.578.11:541.132.3**

Harrassowitz, Hermann, **Atombombenexplosionen und Regen-pH.** [Atom bomb explosions and rain pH.] *Naturwissenschaften,* 43 (1):11–12, Jan. 1956. 7 refs. **DWB**—C. N. MARTIN claimed that the nitric acid in smoke mushrooms from atom bombs is unfavorable for vegetation. Author made a number of pH determinations in rain, dew and snow in W. Germany and found values of 3.1–8.5. The acidity is probably unfavorable, but the problem is complex. A full report is in preparation. *Subject Headings:* **1. Atomic explosion effects 2. pH content of rainwater.**—*C.E.P.B.*

7E–190 **551.594.14:016**

†List, Robert J. (*U. S. W. B., Wash., D. C.*), **Annotated bibliography on the transport and deposition of atomic debris.** Pub. by the U. S. Atomic Energy Commission, Jan. 20, 1956. 27 p. Price: $.15 from U. S. Govt. Print. Off., Wash., D. C. Issued as TID–3061. **DWB**—The 76 papers abstracted in this bibliography deal with sampling and measurement of dust, rain, or snow containing radioactive fission products. In addition to articles appearing in the regular American, British, French and Japanese journals, some unpublished papers of U. S. government agencies and other organizations are included. Quantitative values reported in the papers are given in the abstracts. *Subject Headings:* **1. Bibliography on radioactive fallout 2. Annotated bibliographies.**—*G.T.*

7E–191 **551.594.14:551.579**

Setter, L. R. and Goldin, A. S., **Radioactive fallout in surface waters.** *Industrial and Engineering Chemistry,* 42 (2):251–255, Feb. 1956. 3 figs., 5 tables, 3 refs. **DLC**—Between March 10 and Nov. 15, 1954, 79 rain and six dust samples were collected in Cincinnati, and measured for beta activity. A total of 0.53μc per square meter was deposited during the period. The maximum accumulated activity at any one time was 0.125μc m² and by Nov. 16 0.07μc m² remained from 1954 deposition, due to decay. An additional 0.0127μc m² theoretically remained from 1953 deposition. Vegetation, roofing, dust, etc. was 2 to 1000 times more active than the rain. Nonfilterable activity in rain averaged from 46 to 69% of total, individual values ranged from 18 to 91%. Maximum rainfall activity 10.6μμc/ml on March 13. Studies of activity in cisterns and pond. Monthly average pond activity ranged from 28 to 230μμc/ml, 57–92% nonfilterable. *Subject Headings:* **1. Radioactivity in surface waters 2. Cincinnati, Ohio.**—*R. J. List.*

7E–192 **551.594.14**

*Tajima, Eizo and Doke, Tadayoshi (*both, St. Paul's Univ., Tokyo*), **Airborne radioactivity.** *Science,* Wash., D. C., 123 (3189):211–214, Feb. 10, 1956. 3 figs., table, 8 refs. **DLC**—Results of measurements of airborne radioactivity in Japan from March 16 to May 4, 1955 are reported. Daily values of radioactivity due to fission products are graphically represented in conjunction with rainfall and temperature values. Trajectories of high-pressure centers for the period investigated are plotted on a map. The weak correlation between radioactivity and rainfall amount indicates "that rainfall does not completely clean up the contaminated air." It is suggested that radioactive dust was transported by the jet stream. *Subject Headings:* **1. Radioactive fallout data 2. Radioactivity in the atmosphere 3. Japan.**—*G.T.*

7E–193 **551.509.1:551.594.14**

U. S. Weather Bureau, **Upper air fallout data code.** Jan. 1956. 2 p. **DWB**—A simple upper air fallout data code for use effective Feb. 1, 1956, replacing code dated April 1955. Collections are

at 0817Z and 2017Z and the code will now be selected by RAWIN stations in the continental U.S. Data transmitted for 5000, 10,000, 20,000, 40,000, 60,000 and 80,000 ft levels includes direc toward which particles would fall and distance in statute miles from station at which particles wo land which take 3 hrs to fall from the given level (to tens of miles). Additional instructions given for coding. *Subject Headings:* **1. Upper air fallout code 2. Radioactive fallout.**—*M.R.*

7E–194 662.2:539.1:551.3

Weickmann, L., **Durch die Explosion von Atombomben erzeugte Wolkenformen.** [Cl forms resulting from atom bomb explosions.] *Meteorologische Rundschau*, 9(1/2):1–5, Jan./F **1956.** 7 figs., 3 refs. **DWB**—Some automatic and aircraft photos of the Bikini underwater plosion are reproduced and their development discussed. A column of water 700 m across r to a height of 2500–3000 m. Ten seconds after the explosion a great cauliflower cloud appea at the head of the column, expanding through local saturation. At the upper edge of the troposph (18 km) the cloud field reached 100 mi diameter. Water falling back from the cloud formed a r of spray round the foot of the column. A central projection above the cloud field reached a hei of 30–35 km. *Subject Heading:* **1. Atomic explosion clouds.**—*C.E.P.B.*

SUPPLEMENTARY MATERIAL

7E–195 551.509.59:551.594.

§U. S. Office of Naval Operations, **Aerological aspects of Operation Crossroads.** Its *NAVAE* 50-45T-4, March **1947.** 31 p. 10 figs. **DWB**—Describes organization and operations of t Aerological Unit which was assigned to Operation Crossroads for the purpose of preparing weath forecasts and recommendations for the Bikini atom bomb tests in the summer of 1946. The actu forecasts made are analyzed. In Ch. 5 (p. 20, 27–28) the problem of possible meteorological effe resulting from atom bomb explosions are taken up (thunderstorm generation, rainfall due to radi active nuclei and convective cloud formation). No evidence of a widespread meteorological eff of atomic blasts was furnished by the Bikini tests. *Subject Headings:* **1. Specialized forecas 2. Atomic test weather service.**—*G.T.*

7E–196 551.594.14:662:539

Bethe, Hans; Brown, Harrison; Seitz, Frederick and Szilard, Leo, **The facts about the hydroge bomb.** *Bulletin of the Atomic Scientists*, Chicago, 6(4):106–109, 126–127, April **1950.** With criticis by David E. Lilienthal, p. 109 and Reply by L. Szilard, p. 109, 126–127. Also: Arnold, James R. **The hydrogen-cobalt bomb.** *Ibid.*, 6(10):290–292, Oct. **1950.** Also: Arnold, James R., **Fall-o hazard: an erratum.** *Ibid.*, 11(2):52, Feb. **1955. DLC**—This summary of a radio broadcast properties of H-bombs contains a statement by L. SZILARD according to which all human life cou be extinguished by radioactive fallout. If an H-bomb would be combined with an element whic would absorb all neutrons, the explosion of 500 tons of heavy hydrogen would produce the universall lethal dose of fallout radioactivity. LILIENTHAL's criticism is a "denunciation of the cult of doom ARNOLD re-examines SZILARD's calculations and finds them basically correct, "although a full-sca effort of a major country, over many years would be required" to kill "the vast majority of the rac in this way, and the danger, therefore, is not immediate. *Subject Headings:* **1. Thermonuclea explosion effects 2. Global radioactivity.**—*G.T.*

7E–197 551.521:551.586:57

Cowan, Frederick P. (*Brookhaven Nat. Lab.*), **Everyday radiation.** *Physics Today*, N. Y. 5(10):10–16, Oct. **1952.** 2 figs., 5 tables, 16 refs. **DWB**—The author gives a rough quantitativ survey of various types of radiation to which the human body is currently exposed. The types radiation considered are cosmic rays, natural radioactivity, residual activity due to A-bomb e plosions, radiation from radium-bearing luminescent paint and X-rays. The effect of rainfall a of inversions on the amount of radioactivity originating in atmospheric dust particles is discussed a graphically presented. (*Same item as* 4.6:214, June 1952. *MAB*. *Subject Headings:* **1. Radiatio effects 2. Radioactivity in the atmosphere 3. Human ecology.**—*G.T.*

7E–198 551.510.42:620.92:539.1

†White, Fred D., **Weather Bureau and the Atomic Energy Commission.** (In: Sanitary Enginee ing Conference, Chicago, 1952, **Proceedings.** Pub. **1952.** p. 136–142. 20 refs. **DWB**—Meteor logical services performed by the U.S.W.B. for the Atomic Energy Commission since the incepti of the Manhattan Project include advice on site selection (as to atmospheric stability and weath conditions), engineering data for design and construction, meteorological scheduling of operatio in some cases, reports of hazard frequency and assistance in atomic tests and in sampling over t U.S.A. after tests (125 stations collecting samples). Forecasts as well as climatological and technic

ta are provided. Meteorological research in turbulence and diffusion is outlined. It was und that surface concentrations of radioactivity are 10 to 1000 times as great during precipitation during normal fallout. Future research is projected. A number of technical papers hitherto assified or unpublished are listed. *Subject Headings:* **1. Radioactive fallout networks 2. Atomic ergy meteorology 3. U. S. Weather Bureau 4. Radioactive effluents.**—*M.R.*

7E–199 551.594.14:575.7

U. S. National Bureau of Standards, **Maximum permissible amounts of radioisotopes in the man body and maximum permissible concentrations in air and water.** Its *Handbook* No. 52, arch 20, **1953.** 45 p. 5 tables, eqs. bibliog. p. 34–42. Also Its: **Permissible dose from external ources of ionizing radiation.** *Handbook*, No. 59, Sept. 24, **1954.** 77 p. 3 figs., refs. **DLC**—In *andbook* 52 maximum permissible amounts of radiation for continuous exposure are tabulated o. 14–16) for some 80 radioactive elements. Constants for calculating maximum permissible ternal concentration of radioisotopes are listed on pages 18–29. In *Handbook* 59 the effects of nizing radiation on various human organs and maximum permissible doses for continuous or casional exposure are discussed in detail. Other Handbooks in this series deal with: **Recommendaons for the disposal of carbon-14 wastes** (*Handbook* 53); **Protection against radiations from radium, obalt-60 and cesium-137** (54); **Protection against betatron-synchrotron radiations up to 100 million lectron volts** (55); **Safe handling of cadavers containing radioactive isotopes** (56); **Photographic osimetry of X- and gamma rays** (57); and **Radioactive-waste disposal in the ocean** (58). *Subject Headings:* **1. Radioactive permissible dosage 2. Biological effects of radioactivity.**—*G.T.*

7E–200 551.594.14(931)

Ryder, N. V. and Watson-Munro, C. N., **The detection of radioactive dust from the British uclear bombs of October 1953.** *New Zealand Journal of Science and Technology, Sec. B*, 36(2):155–59, Sept. **1954.** 3 figs., refs. **DLC**—Thirty hours after nuclear explosion near Woomera, Australia, n October 1953, a peak in β-activity of 50 cpm was observed in Wellington, N. Z., on an air filter. second peak of 6 cpm was observed a few hours later. Decay curves indicated the activity was ssion product activity. *Subject Headings:* **1. Radioactive fallout data 2. Wellington, New Zealand.** —*R. J. List.*

7E–201 551.5:539.1:662.2

Arakawa, H., **Possible atmospheric disturbances and damages to the rice-crops in northern apan that may be caused by experimentation with nuclear weapons.** *Geophysical Magazine*, Tokyo, 26(2):125–134, Feb. **1955.** 2 figs., tables, 8 refs. **DWB**—In temperature records for apan for the last 70 years, 1884 appears as the coldest year. This may be attributed to absorption of solar radiation by dust originating in the Krakatoa eruption of 1883. Another extremely cold ummer, June–July 1954, may be due to dust from nuclear explosions at Bikini, March–May 1954. *Subject Headings:* **1. Atomic explosion effects on weather 2. Abnormal summer, 1954.**—*G.T.*

7E–202 551.594.14

Hopper, V. D. and Laby, Jean E. (*both, Univ. Melbourne*), **Electron background in imported G5 emulsions.** *Australian Journal of Physics*, Melbourne, 8(4):557–562, Dec. **1955.** 3 figs., 2 tables, ref. **DLC**—Ilford G5 nuclear emulsion plates received in Melbourne every 2 weeks for 6 months were manufactured in England and shipped by air so as to arrive in Australia about 2 weeks after manufacture. Four of 12 batches showed unusually heavy electron contamination (background) when developed soon after receipt. Estimated background due to cosmic radiation on a 38 hour flight at 10–20 thousand feet will be about 1.5 Mrep, and at ground in storage <0.5 Mrep/day or a total of 10 Mrep or less. Some of the plates show a background of about this amount but some show excessive counts which could be due to irradiation at time of manufacture or storage; or from radioactive isotopes or instrument panel in flight, or from X-ray examination by customs; or from atomic debris after an explosion. The radioactivity at Val Joyeux (7E–174) on several occasions lends support to the last named theory, since the heaviest contamination corresponds with the date of shipment about April 6, on which date VASSY recorded 159C counts/m,l of rain, a value 40 or 50 times normal. Also agreement is shown between contaminated shipment on June 4, with peak values of 192 and 154 counts on June 3 and 6 respectively. *Subject Heading:* **1. Radioactive fallout effects.**—*M.R.*

7E–203 551.594.14:551.501.9

Japan. Central Meteorological Observatory, **The system of routine observations of radioactivities in the air, rain water and sea water in Japan.** (In: International Conference on the Peaceful Uses of Atomic Energy, Geneva 1955, A/CONF.8/P/1051, [**Proceedings**], July 11, **1955.** 4 p. table.) **DWB**—Names, locations and elevations of 16 Japanese stations engaged in routine sampling of radioactivity in rainwater and dust are listed and details of their operations outlined. Results of measurements and samples for radiochemical analysis are regularly sent to the Central

Meteorological Observatory at Tokyo; unusually high values of contamination are reported by Telegram. *Subject Headings:* **1. Radioactive fallout networks 2. Japan.**—*G.T.*

7E–204 551.594.14:35

Lapp, Ralph E., **Civil defense faces new peril.** *Bulletin of the Atomic Scientists*, Chicago, 10(9):349–351, Nov. **1954.** 2 refs. Also his: **Radioactive fall-out.** *Ibid.*, 11(2):45–51, Feb. **1955.** 3 figs. Also his: **Radioactive fall-out III.** *Ibid.*, 11(6):206–209, 230, June **1955.** Also his: **Global fall-out.** *Ibid.*, 11(9):339–343, Nov. **1955.** 2 tables, 8 refs. Also his: **"Fall-out": another dimension in atomic killing power.** *New Republic*, Wash., D. C., 132(7):8–12, Feb. **1955. DLC**—In this series of four articles (the one in New Republic is identical with that in the Feb. 1955 Bulletin) all aspects of radioactive fallout are thoroughly discussed on the basis of published information. Estimates are made of the area of fallout, persistence of the hazard and global atmospheric contamination. Biological effects and possible protective measures are considered. The importance of thorough public information on all properties of radioactive fallout is stressed. *Subject Headings:* **1. Radioactive fallout 2. Civilian defense 3. Atomic explosion effects.**—*G.T.*

7E–205 551.594.14:35

Lapp, Ralph E., **Fall-out and candor.** *Bulletin of the Atomic Scientists*, Chicago, 11(5):170–200, May **1955. DLC**—The author criticizes the U. S. Government's excessive secrecy in dealing with civil defense problems connected with possible effects of nuclear explosions. He objects to the official AEC fall-out release of Feb. 15, 1955 that (a) it is not candid on the persistence of fall-out, (b) it does not define the nature of the superbomb, (c) it glosses over the internal hazard of fall-out particles and (d) it is irrelevant with respect to genetic effects of fallout radiation. (For the AEC report see 7E–178). *Subject Headings:* **1. Radioactive fallout 2. Civilian defense.**—*G.T.*

7E–206 551.594.14:551.463/4

Miyake, Yasuo, **On the distribution of radioactivity in the north Pacific Ocean in 1954–1955** (In: International Conference on the Peaceful Uses of Atomic Energy, Geneva 1955, [**Proceedings**] A/CONF.8/P/1057, July 11, **1955.** 11 p. 6 figs., table, 8 refs.) **DWB**—Sea-water radioactivity measurements made around the Bikini test site are summed up. Horizontal and vertical radioactivity distribution is shown in diagrams. Relation between sea-water activity and fallout is discussed. *Subject Headings:* **1. Radioactivity in ocean water 2. Bikini H-bomb tests.**—*G.T.*

7E–207 551.594.14:662:539.1

Rotblat, J., **The hydrogen-uranium bomb.** *Atomic Scientists Journal*, London, 4(4):224–228, March **1955.** Reprinted in: *Bulletin of the Atomic Scientists*, Chicago, 11(5):171–172, 177, May **1955. DLC**—On the basis of facts communicated in the U. S. Atomic Energy Commission releases of Feb. 1955 (see 7E–178) and other reports, the author speculates on the possible nature of the H-bomb. He calculates that as much as 80% of the power released in an H-bomb explosion may be derived from uranium fission. If this is the case, radioactivity presents a major problem. According to the author's estimate, 75 twenty-megaton bombs exploded over a period of 30 years (i.e. at the rate of $2\frac{1}{2}$ tests a year) would double the natural level of radiation and thus approach a critical value from a genetic point of view. *Subject Headings:* **1. Thermonuclear explosion effects 2. Global radioactivity.**—*G.T.*

7E–208 551.594.14:35

U. S. Congress. Senate. Committee on Armed Services, **Civil defense program.** Hearings before the Subcommittee on Civil Defense of the Committee on Armed Services, 84th Congress, First Session, on operations and policies of the civil defense program, Feb. 22, 26, March 3, 4 and 8, **1955.** Pt. 1 and Appendix. Wash., D. C., U. S. Govt. Printing Office, **1955.** 377 p. figs., photo, tables. Also: **Candor in Congress: the Kefauver hearings.** *Bulletin of the Atomic Scientists*, Chicago, 11(5):181–184, May **1955. DLC**—The main purpose of these hearings was to examine the administration of the 1950 Civil Defense Act, and more particularly, to consider problems arising from radioactive fallout following H-bomb detonations. Physical properties, propagation and biological effects of radioactive fallout, other effects of thermonuclear bombs, and the present status of various civil defense programs are thoroughly discussed in all their aspects by such authorities as W. F. Libby (Commissioner, U. S. Atomic Energy Comm.), V. Peterson (Administrator, Fed. Civil Defense Admin.), A. S. Fleming (Dir., Office of Defense Mobilization), J. C. Bugher (Dir. of Biology and Medicine, U. S. AEC) and others, with Senators Kefauver, Symington, Jackson, Saltonstall and Smith as members of the Subcommittee. Thus, even though the physical factors involved are treated only in general terms, this document is probably the most complete and most informative single source available to date on fallout and other H-bomb effects in relation to civil defense. Publication of this type of information was, in fact, one of the aims of the Subcommittee, and to this end several documents (such as AEC reports, articles by R. E. Lapp, etc.) are added as Exhibits 1 to 18. The article in the *Bulletin* gives excerpts from the Feb. 22 session. *Subject Headings:* **1. Civilian defense 2. Radioactive fallout 3. Congressional hearings.**—*G.T.*

7E–209 551.510.42:628.53:551.594.14

Wexler, H.; Machta, L.; Pack, D. H.; and White, F. D. (*all U. S. Weather Bureau*), **Atomic energy and meteorology.** (In: International Conference on the Peaceful Uses of Atomic Energy, Geneva 1955, [**Proceedings**], A/CONF.8/P276, June 23, **1955.** 28 p. 9 figs., 26 refs., 14 eqs.) **DWB**—The role of meteorology in site selection and plant design for nuclear reactors is outlined. The various factors involved in the atmospheric diffusion of gases (physical state of effluent, geographical and orographical effects, wind, temperature gradient and precipitation) are discussed and the use of theoretical diffusion equations is explained. The practical problems of radioactive meteorological tracers, of reactor site selection and of the analysis of environmental hazards from reactors are considered. The diagrams and charts presented show the type of meteorological information used in nuclear plant studies. *Subject Headings:* **1. Radioactive effluents 2. Stack meteorology.**—*G.T.*

7E–210 551.594.14

List, R. J., **Radioactive fallout in North America from Operation Teapot.** (To be published by U. S. Atomic Energy Commission, Washington, D. C., **1956.**) Meteorological trajectories of debris from the Nevada atomic tests in the Spring of 1955 are given, together with the daily fallout at over 100 gummed film stations in North America for the period Feb. 18–May 20, 1955. Experiments indicate that on dry days, inverted and vertical gummed films collect about 40% as much as normal horizontal films; on days with precipitation, about 1 to 4% as much. Radioautographs of individual rain drops indicate that during a period of fallout at Chicago, about three drops in a hundred were radioactive. *Subject Headings:* **1. Radioactive fallout data 2. United States.**—*R. J. List.*

7E–211 551.594.14:551.508.94

Schumann, G., **Untersuchung der Radioaktivität der Atmosphäre mit der Filtermethode.** [Investigation of atmospheric radioactivity by the filter method.] *Archiv für Meteorologie, Geophysik und Bioklimatologie*, Ser. A, Vienna, 9(2):204–223, **1956.** 7 figs., 24 refs., 10 eqs. German, English and French summaries p. 204–205. **DWB**—Radioactive aerosol is caught by a filter which is then placed inside a counter; procedure is described. Observations were made at ground level near Heidelberg (130 and 565 m). Quantitative estimates are given of the various Ra and Th products (including atom bomb products, 10^{-13}–10^{-12} curie/m^3). There were considerable variations which are attributed to the effect of weather on ground emanations. Precipitation and fronts greatly decrease activity. Relations are also found to pressure, time of day and vertical air movements. Measurements were also made in air sucked from boreholes some meters deep, and related to geological structure. *Subject Heading:* **1. Radioactivity measurement techniques.**—*C.E.P.B.*

7E–212 551.594.14:681.177

U. S. National Bureau of Standards, **Radioactive fallout computer.** Its *Technical News Bulletin*, 40(4):56–58, April **1956.** Photos, diagrs. **DLC**—A "special purpose computer developed for predicting the geographical fallout pattern resulting from a nuclear explosion" is described. Meteorological data and information on properties of the bomb exploded are fed into the machine which then produced and oscilloscope pattern representing the fallout distribution and intensities. By laying a (transparent) map over the oscilloscope, radioactive intensities may be obtained up to 500 miles from ground zero. Photographs of the instrument panel and oscilloscope and two simplified schematic diagrams are presented. *Subject Heading:* **1. Radioactive fallout computers.**—*G.T.*

7E–213 662.2:539.1:77.9

Handel Film Corporation (Hollywood, Calif.), **Atom and the weather.** Film, 12½ minutes, rent $10.—This film illustrates why tests of atomic weapons have no effect on the weather; how radioactive fallout is carefully traced to protect the public and how radioactivity from atomic tests is used as a research tool by the weatherman. *Subject Headings:* **1. Atomic explosion effects 2. Educational films.**—*From Educational Film Guide.*

7E–214 551.594.14:662.2:539.1

Blifford, I. H., Jr.; Lockhart, L. B., Jr. and Baus, R. A. (*all, U. S. Naval Research Lab.*), **Relationship between air concentration of radioactive fission products and fallout.** *Nature*, London, 177(4517):990–992, May 26, **1956.** fig., 2 tables, ref. **DWB**—A comparison is made between the daily concentrations of fission products collected by gummed paper and by air filter, at Washington Dec. 1954–May 1955. The fallout averaged 2.3×10^3 ft/day for days without rain and 30×10^3 for rainy days, but with great variations. There was little correlation with concentration in the air, nearly all the fallout was in one week when the concentration was not especially high. *Subject Headings:* **1. Atomic explosion effects 2. Radioactivity in the atmosphere 3. Washington, D. C.**—*C.E.P.B.*

PART III. REVIEWS OF RECENT IMPORTANT METEOROLOGICAL MATERIAL, AND METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The references to reviews of new books or monographs and the contents of periodicals included in this section are for information only and will not be listed in the monthly indexes until abstracted. When material is furnished in advance of publication, the pagination may be omitted.

A. REVIEWS OF IMPORTANT METEOROLOGICAL MATERIAL

Alisov, B. P.; Berlin, I. A. and Mikhel', V. M.: **Kurs klimatologii, chast' 3** [Course in climatology Pt. 3]. Ed. by E. S. Rubinshteĭn. Leningrad, Gidrometeoizdat, 1954. Review by A. I. Tokmanov in *Meteorologiia i Gidrologiia*, Leningrad, No. 5:61–63, Sept./Oct. 1955. (*See* 6.11–5, Nov. 1955, *MAB.*)

Bartholomew, John: **Advanced Atlas of Modern Geography.** New Series, 3rd ed. London, Meikle john, 1953. 102 p. of maps. 51 p. of index. Price, 30 sh. Review by R. E. Lacy in *Weather* London, 11(3):96, March 1956.

Bellamy, J.: **Four dimensional flight planning.** [In] *Journal of Navigation*, 4(3), Sept. 1954. Review by F. Cerasuolo in *Rivista di Meteorologia Aeronautica*, Rome, 15(2):39, April/June 1955. (*See* 6.7–91, July 1955, *MAB.*)

Compendium of Meteorology, ed. by Thomas F. Malone. Boston, American Meteorological Society 1951. 1334 p. Review by László Felmery in *Időjárás*, Budapest, 59(5):299–300, Sept./Oct 1955. (*See* 3.3–1, March 1952, *MAB.*)

Germany. Deutscher Wetterdienst in der US-Zone: **Klima-Atlas von Bayern** [Climatic atlas of Bavaria]. Bad Kissingen, Zentralamt, 1952. Scale of map 1:1,000,000. 47×50 cm. Review by Adam Schmuck in *Przegląd Geograficzny*, Warsaw, 27(1):156–158, 1955. (*See* 4.2–4, Feb 1953, *MAB.*)

Germany. Deutsche Demokratische Republik. Meteorologischer und Hydrologischer Dienst **Klima-Atlas für das Gebiet der Deutschen Demokratischen Republik** [Climatic atlas for the German Democratic Republic]. Berlin, Akademie Verlag, 1953. Scale of map 1:1,000,000 42×56 cm. Review by Adam Schmuck in *Przegląd Geograficzny*, Warsaw, 27(1):154–156, 1955. (*See* 5.4–2, April 1954, *MAB.*)

Gustafson, A. F.: **The error in rawin computations due to neglecting the earth's curvature.** [In] *American Meteorological Society, Bulletin*, (7):295–300, 1954. Review by F. Rispoli in *Rivista di Meteorologia Aeronautica*, 15(2):40–41, April/June 1955. (*See* 6.6–57, June 1955, *MAB.*)

Hood, Peter: **The atmosphere.** London, Oxford Univ. Press and Geoffrey Cumberlege, 1952. 64 p. Price, 8 sh. 6 d. Review by [D. G. Hurley?] in *Weather*, London, 11(2):59–60, Feb. 1956. (*See* 4.6–15, June 1953, *MAB.*)

L'Institut Royal Météorologique de Belgique [The Royal Meteorological Institute of Belgium]. Brussels, pub. by the Institute, 1954. 216 p. Review by Luigi Pellisari in *Rivista di Meteorologia Aeronautica* 15(2):44, April/June 1955. Review by J. R. Rivet in *World Meteorological Organization, WMO Bulletin*, 5(1):38, Jan. 1956. (*See* 6.10–10, Oct. 1955, *MAB.*)

Istoshin, IU. V.: **Okeanografiia** [Oceanography]. Leningrad, Gidrometeoizdat, 1953. Review by L. G. Toporkov in *Meteorologiia i Gidrologiia*, Leningrad, No. 5:64–66, Sept./Oct. 1955. (*See* 6.5–6, May 1955, *MAB.*)

Kashin, K. I. and Gritsenko, M. V.: **Ob izmenenii davleniia u zemnoĭ poverkhnosti** [Change of pressure at earth's surface]. [In] *Meteorologiia i Gidrologiia*, Leningrad, No. 5, Sept./Oct. 1954. Review by N. N. Romanov in *ibid.*, No. 6:59–60, Nov./Dec. 1955.

Kochin, Nikolaĭ Evgrafovich; Kibel', I. A. and Roze, N. V.: **Theoretische Hydromechanik, Bd. 2** [Theoretical hydromechanics, vol. 2]. Trans. from Russian and technically edited by K. Krienes. Berlin, Akademie-Verlag, 1955. 569 p. Price, DM 48. Review by O. G. Sutton

in *Meteorological Magazine*, London, 85(1004):60–61, Feb. 1956. (For review of original Russian, *see* 6.5–7, May 1955, *MAB*.)

Kondrat'ev, K. IA.: **Luchistaia energiia solntsa** [Radiational energy of the sun]. Ed. by P. N. Tverskiĭ. Leningrad, Gidrometeoizdat, 1954. Review by M. E. Berliand; N. A. Efimova and IU. D. Ianishevskiĭ in *Meteorologiia i Gidrologiia*, Leningrad, No. 5:63–64, Sept./Oct. 1955.

Krivský, Ladislav and Krivska, B.: **Klima Ondrejowa po astronomickou potřebu** [Climate of Ondrejov for astronomical purposes]. [In] *Meteorologické Zprávy*, Prague, 6(5):133–139, 1953. Review by Janusz Paszyński in *Przegląd Geograficzny*, Warsaw, 27(1):162–163, 1955.

Kyriazopoulos, Basil D.: **Degree of wintriness.** *Thessalonike. Univ. Meteorological Institute, Meteorologica*, No. 1, 1954. 25 p. illus. Review by H. H. Lamb in *Meteorological Magazine*, London, 85(1004):61, Feb. 1956.

Lundegårdh, Henrik: **Klima und Boden in ihrer Wirkung auf das Pflanzen-Leben,** [Climate and soil in their influence on plant life]. 4th rev. ed. Jena, G. Fischer, 1954. Review by Michał Strezemski in *Przegląd Geograficzny*, Warsaw, 27(1):163–164, 1944.

Minkel'deĭ, M. A.: **M. M. Pomortsev: pervyĭ russkiĭ aerolog** [M. M. Pomorotsev: the first Russian aerologist]. Leningrad, Gidrometeoizdat, 1954. Review by A. Kh. Khrgian in *Meteorologiia i Gidrologiia*, Leningrad, No. 6:58–59, Nov./Dec. 1955.

Physical Society of London: **Reports on Progress in Physics,** Vol. 17. 1954. Ed. by A. C. Stickland. 280 p. Price, £ 2, 10 sh. Review by E. R. Cohen in *Physics Today*, N. Y., 9(3):24, March 1956.

Riazanov, V. A. (ed.): **Predel'no dopustimye kontsentratsii atmosfernykh zagraznenii** [Safe concentrations of atmospheric pollutants]. 2nd ed. Moscow, Medgiz, 1955. Review by A. I. Shafir in *Gigiena i Sanitariia*, Moscow, 21(1):59–60, Jan. 1956.

Sapozhnikova, S.: **Mikroklimat i klimat lokalny** [Microclimate and local climate]. Warsaw, Pánstwowe Wydawnictwa Rolnicze i Leśne, 1953. 221 p. Review by Janusz Paszyński in *Przegląd Geograficzny*, Warsaw, 27(1):158–162, 1955. Review by St. Zych in *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, 7(1/2):92, 1954.

Shamov, G. I.: **Rechnye nanosy** [River deposits]. Leningrad, Gidrometeoizdat, 1954. Review by I. A. Chebotarev in *Meteorologiia i Gidrologiia*, Leningrad, No. 6:57–58, Nov./Dec. 1955.

Shaw, Sir William Napier: **Selected Meteorological Papers.** Lond., Macdonald, 1955. 276 p. Review by R. Bilancini in *Rivista di Meteorologia Aeronautica*, Rome, 15(2):43–44, April/June 1955. Review by D. A. Davies in *World Meteorological Organization, WMO Bulletin*, 5(1):39, Jan. 1956. (*See* 7.1–2, Jan. 1956, *MAB*.)

Sverdrup, Harald U. and Munk, Walter: **Veter, volnenie i zyb': teoreticheskie osnovy prognoza** [Wind, sea and swell: theoretical basis for forecasting]. [A chapter from **Osnovy predskazaniia vetrovykh voln, zybi i priboia.** (Principles of forecasting wind, swell and surge.) Moscow, I.I.L., 1951.] Translation from English ed. by V. B. Shtokman. Review by A. A. Ivanov in *Akademiia Nauk SSSR, Izvestiia, Ser. Geofiz.*, No.:117–118, 1956. (For abstract of original English, *see* 5K–40, Nov. 1954, *MAB*.)

Tricart, Jean: **Climat, vegetation, sols et morphologie** [Climate, vegetation, soils and morphology]. 50e anniversaire du Laboratoire de Géographie, Rennes, 1952. Review by Jan Dylik in *Przegląd Geograficzny*, Warsaw, 27(2):400, 1955.

Vaeth, J. Gordon: **200 miles up.** 2nd ed. N. Y., Ronald Press, 1955. 261 p. Price, $5.00. Review by E. P. Martz in *Physics Today*, N. Y., 9(3):20, March 1956.

Wiszniewski, Wacław: **Atlas opadów atmosferycznykh w Polsce 1891–1930** [Atmospheric precipitation atlas of Poland, 1891–1930]. Warsaw, Państwowy Instytut Hydrologiczno-Meteorologiczny, 1953. 51 p. 14 maps. Review by Janusz Paszyński in *Przegląd Geograficzny*, Warsaw, 27(1):151–154, 1955.

B. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Acta Geophysica Polonica, Warsaw, Vol. 3, No. 3, 1955

Tison, L. J.: **Antoine Dobrowloski et l'expédition de la "Belgica,"** [Antoine Dobrowolski and the expedition of the "Belgica"], p. 101–102

Smosarski, Władysław: **La pression atmosphérique et la température du sol sous une couche de neige,** [Atmospheric pressure and the temperature of the soil under snow cover], p. 103–109

Kajetanowicz, Zbigniew: **Observations hydrologiques dans un systeme homogène,** [Hydrological observation in a homogeneous system], p. 110–114

Michnowski, Stanisław: **Wpływ wyładowan z ostrzy na wartość natężenia pola elektrycznego przy powierzchni ziemi,** [Influence of point discharge currents on the earth's electric field], p. 115–130

Gryglewicz, Zofia and Wojtczak, Bozenna: **Aktywność sejsmiczna w 1954 r,** [Seismic activit in 1954), p. 131–137

Olczak, T.: [**Obituary of**] **Profesor Dr Tadeusz Banachiewicz, 1882–1954,** p. 138–141

Vol. 3, No. 4, 1955

Olczak, Tadeusz: **Über die Säkularänderungen des Erdmagnetismus in Polen im zeitraum von 1901,0 bis 1935,0,** [Secular variation of geomagnetism in Poland 1901–1935], p. 145–154

Czyzewski, O.; De Mezer, J. and Strzałkowski, A.: **Observations of solar radio radiation durin the eclipse of June 30, 1954, Pt. 1,** p. 155–160

Teisseyre, Roman: **Optico-geometrical approximation for seismic waves in non-homogeneou media,** p. 161–166

Bac, Stanislaw and Marcilonek, Stanislaw: **La condensation de la vapeur d'eau dans le sabl et dans le gravier en vue des conditions climatiques en Pologne,** [Condensation of wate vapor in sand and in gravel under the climatic conditions of Poland], p. 176–194

Wierzbicka, Zuzanna: **Badanie promieniotwórczości γ i β próbek skał,** [Investigation o radioactivity of Y and B samples of rocks], p. 195–207

Przybyszewski, Eugeniusz: **O korelacji między charakterystykami magnetycznymi C i liczbam wolfa,** [Correlation between magnetic C characteristics and Wolf numbers], p. 208–212

Akademiia Nauk SSSR, Izvestiia, Ser. Geofizicheskaia, No. 6, Nov./Dec. 1955

Sretenskiĭ, L. N.: **Zadacha Koshi-Puassona dlia poverkhnosti razdela dvukh tekushchikh potokov,** [The Cauchy-Poisson method for the discontinuity surface between two streams] p. 505–513

Timofeev, M. P.: **K teorii advektivnykh tumanov,** [Theory of advective fogs], p. 514–520

Breĭdo, Ts. G.: **Issledovaniimekhnizma adsorbtsii ionov kapliami vody,** [Investigation of the mechanics of adsorption of ions by water drops], p. 521–528

Krasnogorskaia, N. V.: **Fotoelektricheskiĭ metod issledovaniia raspredeleniia razmerov chastits osadkov,** [Photoelectrical method of investigating the size distribution of particles o precipitation], p. 529–537

Laĭkhtman, D. L.: **O fizicheskikh printsipakh normirovaniia orosheniia,** [Physical principles of the regulation of irrigation], p. 540–546

Shvets, M. E.: **O kondensatsii vodianogo para v atmosfere,** [Condensation of water vapor in the atmosphere], p. 547–551

Krylov, P. A.: **Aktinometr Mikhel'sona kak absoliutnyĭ pribor,** [The Michelson actinometer as an absolute instrument], p. 552–556

Ivanov, A. A.: **Izmenchivost' vetrovykh voln moreĭ i okeanov,** [The variability of wind waves in seas and oceans], p. 557–560

Akademiia Nauk SSSR, Izvestiia, Ser. Geofizicheskaia, No. 1, Jan. 1956

Kazanskiĭ, A. B. and Monin, A. S.: **Turbulentnost' v prizemnykh inversiiakh,** [Turbulence in inversions near the ground], p. 79–86

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